

# Progress and Prospects on Water: For a Clean and Healthy World

with Special Focus on Sanitation

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**WORLD**  
in Stockholm,  
August 17–23, 2008 **WATER**  
**WEEK**

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# The 2008 World Water Week in Stockholm

## Synthesis Report

Over 2,300 leaders in science, government and civil society from more than 130 countries and 200 collaborating organisations gathered at the 2008 World Water Week in Stockholm to chart the path forward for a world where crises and opportunities are converging. Billions suffer ill health due to lack of access to safe sanitation or clean drinking water while growing, richer populations mount pressure on stressed water resources and global food, finance and energy sectors are in turmoil. Under the theme “Progress and Prospects on Water – For a Clean and Healthy World with Special Focus on Sanitation” experts assembled in over 90 sessions including workshops, seminars, side events and high level debates to share ideas and recommend solutions on topics ranging from sanitation, agriculture, biodiversity and climate adaptation to governance, technology and health.

In its role as organiser and host of the 2008 World Water Week, the Stockholm International Water Institute (SIWI) has prepared and published this Synthesis Report. The report analyses the issues, initiatives and recommendations put forward during the Week for the benefit of the participants and the broader water and development communities. The Overarching Conclusions in **Section 1** are compiled and written by SIWI to try to capture what we feel were the key issues and insights advanced during the week. **Section 2** includes analysis by specially appointed World Water Week Rapporteur Teams covering five predetermined thematic streams: Sanitation; Environmental Pollution and Ecosystems; Water and Climate Change; Transboundary Waters; and Water Resources Management. **Section 3** highlights the work of those honoured during the week with the Stockholm Water Prize, the Stockholm Junior Water Prize, the Stockholm Industry Water Award, the Swedish Baltic Sea Water Award, and the WASH Media Awards. As mentioned

earlier, over 200 organisations from all over the world and from a variety of sectors convened sessions during the week, and you can find a full list of these organisations on page 30.

The ambition of the World Water Week, as we see it, is to contribute towards meeting the challenges we face within the water and development field. We aim to build upon the outcomes of previous World Water Weeks as well as other water-related meetings and conferences that occur around the world. This synthesis report, by drawing firm conclusions from over 90 events, offers a chance to take stock of the progress made and the opportunities that lie ahead.

With the richness of important research and experiences presented during the week, a Synthesis Report such as this can of course not cover them all in detail. Presentations from each session and the complete synthesis report featuring summaries from each session are available electronically at [www.worldwaterweek.org](http://www.worldwaterweek.org).

I would like to take this opportunity to thank all of you, convening organisations, participants, sponsors and partners for your role in again making the 2008 World Water Week in Stockholm a success and an important step to enhance the agenda of water and sustainable development for our common future. I would also like to welcome you back for the 2009 World Water Week in Stockholm under the theme “Accessing Water for the Common Good” with special focus on Transboundary Waters.

Anders Berntell  
Executive Director  
Stockholm International Water Institute



Photo: Dan Shirley - SYC

## Overarching Conclusions

The Overarching Conclusions present some of the key issues and insights from the 2008 World Water Week from SIWI's perspective. In this section, the water-related issues of sanitation, climate change, virtual water and transboundary waters that were raised in various fora during the week are explored. The aim is to summarise the discussions around these key issues to ensure that the dialogue continues beyond the World Water Week.

### Break the Sanitation Taboo

In light of the UN International Year of Sanitation, efforts to accelerate progress on sanitation coverage and hygiene practices were given special focus at the 2008 World Water Week in Stockholm. With a lingering, deplorable sanitation crisis, the efforts and mandates of the sanitation sector are necessary. But they are far from sufficient. At the current rate of progress, the Millennium Development Goal Target on improved sanitation will be missed by 700 million people. All actors, particularly politicians, need to speak up and start to plan for sanitation. They must back up talk with appropriate budgets for its realisation.

- Sanitation should be promoted as the cost-effective investment and human health intervention it is. The little money that is required to achieve the MDG sanitation target and, ultimately, universal sanitation coverage could not be more well spent. It is estimated that the economic return from improved sanitation is about USD 9 for every USD 1 invested. The low cost to high benefit ratio of sanitation programmes must be used as the selling point to attract decision makers to invest and provide needed budget lines at all levels. We also need to make sure that we not only talk about household sanitation, but also highlight "institutional" sanitation in schools, public spaces and work places.

- Plain talk is also needed on sanitation. HIV/AIDS struggled in the past with being a taboo subject, something sordid and personal that is unpleasant to address in the political debate. The sanitation taboo is even stronger and needs to be broken. The success of HIV/AIDS campaigns to break the taboo must be looked at as a model for sanitation and hygiene. At the national and international level this will require smart public relations and advocacy campaigns. At the local level, social marketing based on an understanding of community values, desires and product choice is needed to make sure we have demand driven approaches.
- Technical solutions, like smarter or cheaper latrines, are also necessary. However, if they are not wanted or culturally accepted they will not spread. The combination of cultural consent, local demand, behaviour change and appropriate logistical solutions is paramount.

### Productive Sanitation

- The conventional linking of water and sanitation, i.e. WSS, needs to be revisited. Some sanitation systems are water borne, whereas other systems are dry. Dry sanitation has important potential benefits beyond the sector itself. The nutritional contents of faeces and urine can provide an important source for soil improvement and enhance land and water productivity. Recycling of phosphorous and nitrogen through "productive sanitation" could replace or reduce the need for commercial fertilisers and reduce the pressure on the finite mineral resources. At the same time, it augments food security and could also be a source of energy. However, water is always a vital component for hygiene, especially hand washing. The link to water is also obvious in terms of pollution of recipient water bodies.

- The potential for different kinds of sanitation solutions should be further explored and visualised. Research on social acceptance of practical arrangements is fundamental. We also need to know more on potential health risks of sanitation options under climate change conditions.
- A vital part of the sanitation solution is the involvement of the private sector. A number of sessions during the week drew attention to the ways in which business is and can be involved in developing and implementing sanitation solutions that benefit society as a whole, as well as the bottom line. Benefits to business from improved sanitation include increased operational efficiency, creation of new markets and a healthy and productive workforce.

### **Climate Change Mitigation, Adjustment and Adaptation**

A greater variability in the availability of water, between years and seasons is one of the results from a higher frequency of extreme weather events and increased temperature. Drivers of climate change include emission of greenhouse gases, which in turn are the result of human activities in agriculture, transport and industry. Mitigating climate change requires these emissions are reduced. Adaptation largely entails managing the impacts climate change has on water-related issues. Strategies are needed to address more extreme floods and droughts at a large-scale.

- Research on how to ensure food production in areas facing increasing temperature and water stress is crucial for many countries, especially those in the tropics. Significant reductions in the potential yields have been reported as a likely effect of climate change in Sub-Saharan Africa and Southern Africa. But reduction in the potential is not the same as real reductions. The gap between actual and potential yields is significant but it varies significantly even within local communities with similar physical pre-conditions. Farmers and communities must learn from good examples to produce more efficiently through the use of improved seeds, nutrient strategies and better rainwater management.
- More knowledge is needed about the potential of green water development and use, e.g. harvesting and storing rainfall locally and how to best combine that with land and soil management. The beauty of this solution is that the communities can do most of the arrangements through their own efforts. But some support is required, for example, loan schemes, preferably combined with “strategic” subsidies for innovation and illustration of good practice, i.e. a tailored extension service.
- Apart from production per se, transport, storage and processing must improve to meet rising food demand in urban areas. Consumption patterns are increasingly important in food and nutrition policies. Many of the required and promising changes will take time, both due to the complexity in the physical production and supply systems but also in terms of the inertia in trends in consumer preferences.

It must be recognised that some of the changes indicated above refer to medium and long term climate adaptation strategies. Societies also must adjust in the short term. The likely regional variation in impacts from climate change will also require a revisiting of trade and the comparative advantages and disadvantages of production between different parts of the world.

### **Changing Context for Virtual Water Trade**

Virtual water refers to the amounts of water that have been used to produce a good, for example, food items like wheat or meat. The water consumed is not visible in commodities, but huge volumes are embedded in a virtual form.

- For countries, where food self sufficiency is not possible due to water shortage and other constraints, the option is either to import food, i.e. virtual water, or to import water in a real sense. A number of water starved countries have already, to a greater or smaller degree, chosen the option to import water intensive goods produced elsewhere. Export and import of water intensive commodities can also be rational if the exporting country can produce goods more efficiently than the importing countries can. Naturally, export and import of food and other commodities are developed for many reasons.
- Climate change, including global warming, will modify the geography of production potential. In combination with economic and demographic trends, food security issues will increasingly have to be dealt with at an international scale. One basic dilemma is, of course, that to be able to import countries must also export to obtain the foreign currency required to pay for imports.
- Countries and social groups with an economic strength can make use of the opportunities for “virtual” water trade. For countries with a weak economy and with little water and other resources, options are limited and strategies must differ. Switching to a strong urban industrial and service-oriented export economy is not realistic for poor and water starved countries in the short run.
- One option that is worth exploring is the promotion of value-added activities in the agricultural sector and making use of opportunities in the expanding urban market. Farmers need to better control and benefit from the processing of agricultural commodities and not only try to sell them in a raw form. Combined with a strategy to reduce the risk of spoilage, for example to better conserve the quality and quantity of commodities, both farmers and buyers may benefit. The demand for agricultural commodities is widening and includes an increasing demand for raw material for energy, fiber, etc.
- In a world of rapid demographic and economic change, it is essential that civilisation’s life support systems – land, water and biological resources – are productively utilised and maintained. Effective and scientifically sound policies are needed to prevent over-exploitation and degradation of water and natural resources.



### Benefit and Risk Sharing in Transboundary River Systems

Policies, political constituencies and socio-economic systems are only partially organised in harmony with boundaries and dynamics of physical and biological resource systems. The global and national mismatch between population distribution, resource endowment and production systems is a case in point. Water abundant countries rarely orient their economies towards water intensive activities while water starved countries often maintain a large low-value and water-intensive industry, like smallholder agriculture.

- Water and the benefits derived from its use need to be better and more fairly shared between different parts of the world and also between countries located within the confines of a transboundary water system.
- Many of the big transnational water systems are microcosms of the global situation. They contain water rich and water short areas; cities and rural sectors and different political and socio-economic systems. Riparian countries need to collaborate to improve conditions in the basin and minimise the risk of devastating conflict.
- Better understanding and guidance is required for how this complex process can be balanced and governed. A basic idea of the IWRM concept is to balance and broker between interests and activities that seem to be or are incompatible. The “M”, for Management, basically refers to technical and optimisation issues, i.e. the tools and methods for water allocation and use. But it does not say anything about how to best distribute the benefits from the goods and services produced from water use.
- In addition and as a support to water resources management, a strong and effective governance structure, founded in the

political systems is required to ensure two major tasks (i) budget allocations, regulation, data and information sharing and retrieval, (ii) how to best distribute the goods and services that are produced, usually referred to as benefit sharing.

- A strategy for balancing between interests and to generate positive synergies is required for guiding authorities and agencies about how to make use of both green and blue water, where and for what purpose the resources can be used. Coupled with this strategy, it is necessary to include a strategy for financial management, risk and benefit sharing.

### Two Types of Knowledge

Bridging knowledge with policy can provide solutions to the myriad of water-related challenges. The implementation of policy and transfer of knowledge to where it can be applied is a difficult and crucial step. In the sanitation sector, for example, massive international campaigns require long periods of time to implement. The tendency, however, is to reinvent the wheel.

Knowledge gaps result from lack of understanding and/or from a new situation, which implies a need for further research. Typically, climate change will expose societies to situations and processes that, by definition, are not being researched or are poorly understood. Poor trans-generational, trans-sectoral and trans-cultural transfers of knowledge aggravate these gaps. Additional and “new” research must therefore be integrated with a strategy for knowledge conservation, upgrading, translation and transfer. We need to know more about how to conserve and transfer yesterday’s wisdom with new techniques to supplement existing knowledge. It is important to identify successful cases to improve capacity and make sure that the wisdom that has contributed to progress is not dying.



Photo: Thomas Henrikson



## Special Focus Theme Report – Sanitation

**Lead Rapporteurs: Ms. Barbara Evans, and Prof. Ausaf Rahman**

**Junior Rapporteurs: Mr. Nelson Ekane, Ms. Lovisa Selander and Mr. Enest Nkengayi Ategwa**

### Context and Regional Dimensions

The Sanitation Challenge. The Last Taboo. The World's Greatest Development Scandal. These were all phrases to be heard at this year's World Water Week, which for the first time put special focus on sanitation. 2008 is the International Year of Sanitation, a year in which the international community recognised that the burden borne by people who live without sanitation dwarfs the efforts being made to address the gap (see Box 1).

#### A Complex Geographical Challenge

Figure 1 shows that the majority of those who lack access reside in Asia, and Figure 2 indicates that the bulk of the disease burden associated with lack of access to sanitation and hygiene falls on Africa.

Notwithstanding the huge challenges of Africa, other regions also present particular problems (see for example Box 2).

#### A Highly Effective Intervention

Investments in sanitation have been shown to have major impacts on reducing diarrhoeal disease and cutting deaths, especially to children under age 5 (see Box 3). Hygiene promotion is reported to be the single most cost-effective intervention in reducing health burdens, while sanitation lies within the top ten according to DCPDC data presented by various presenters including S. Cairncross and R. Franceys. Despite this, however, achieving these health gains is challenging. Experts increasingly believe that a complex combination of core behaviour changes and infrastructure use is required to achieve long term health gains. What is more, the drivers at individual and community level rarely relate to health and are more commonly associated with issues of privacy, security and pride. Thus, effective sanitation interventions are about more than the delivery of toilets.

#### Box 1: Poor sanitation is a big development issue which is relatively under funded

A number of excellent presentations were made during the week which highlighted the startling statistics around sanitation. The small selection below serve as an illustration.

- Diarrhoea kills more children under five than malaria and HIV/Aids together; 5,000 children die from diarrhoea every day. Source: World Health Organization.
- Up to 25 times more aid is allocated towards HIV/Aids than to sanitation. Source: Organisation of Economic Cooperation and Development.
- Approximately 2.5 billion people lack access to 'improved' sanitation as defined by the United Nations. An estimated 3.5-5 billion people lack access to sustainable sanitation that can reliably deliver the needed health and environmental benefits in the long term. Source: D. Mara, Leeds University.
- Approximately one quarter of Africans are still obliged to practice open defecation.
- Sanitation is the most cost-effective health intervention. Source: London School of Hygiene and Tropical Medicine, World Health Organization, World Bank.
- The money needed to achieve the sanitation targets in the Millennium Declaration is on par with the annual turnover of the bottled water industry. Source: United Nations Children's Fund.

#### Slow Progress

While progress has been made over the last 15 years, it is slow. In Sub Saharan Africa progress is barely keeping pace with population growth. While the absolute number of people without access globally has fallen by about 73 million, this number is small compared with the 2.6 billion who must still be provided for (Table 1). The number of urban dwellers without access is rising (by 24 percent over 15 years). Increasing urban growth and growing informality in urban areas are significant challenges.

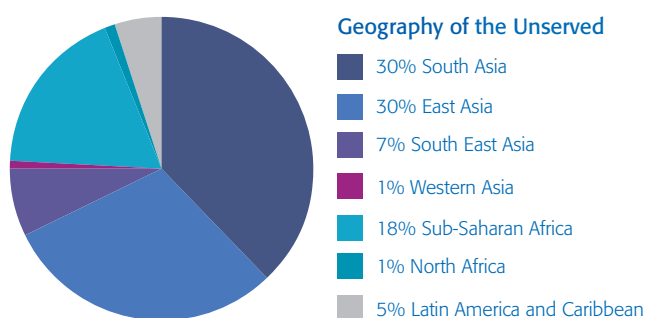


Figure 1: Geography of the Unserved. Source: JMP data presented by the Water and Sanitation Program.

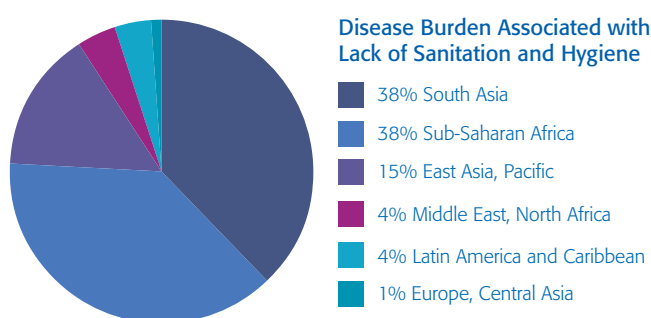


Figure 2: Disease Burden Associated with Lack of Sanitation and Hygiene. Source: Disease Control Priorities in Developing Countries (DCPDC) data presented by the Water and Sanitation Program.

## Box 2: Sanitation Challenges and Developments in Europe

One less known sanitation challenge is that faced by the countries of Europe, particularly Eastern Europe. In many cases coverage is low and falling due to poor maintenance and a backlog of rehabilitation needs. More than 20 million Europeans lack access to improved sanitation. Excellent progress in modelling pollution risks and financial needs have resulted in some sophisticated decision-making arrangements (for example in assessing pollution abatement options for the Baltic Sea), but more work is needed to deliver basic sanitation and hygiene to the most needy. Source: Presentations by Women in Water in Europe and Swedish EPA.

## Box 3: Impact of Sanitation Interventions on Diarrhoea Incidence

A review of available literature confirmed the following estimates of impact on incidence of diarrhoea:

Water Supply	
Public source	17%
Additional benefit with house connection	63%
Excreta disposal	36%
Hygiene promotion	48%

The review also revealed that:

- Hygienic disposal of children's faeces is much less prevalent than access to improved sanitation and is a neglected area.
- Health benefits from access to water are highest when a private connection is available. Benefits fall when the supply is public but remain fairly constant until the time taken for a round-trip to collect water rises to 30 minutes or more, at which time the benefits again fall dramatically.

Source: DCPDC data presented by various presenters including S. Cairncross and R. Franceys.

	Urban		Rural		Total	
	NO access	Millions	NO access	Millions	NO access	Millions
1990	21%	477	74%	2227	51%	2693
2004	20%	626	61%	1988	41%	2620
Change in absolute no.		149		-239		-73
Change in percent	-1%	24%	-13%	-12%	-10%	-3%

Table 1: Global numbers without access to improved sanitation. Source: JMP data presented by WSP.

## Progress Made

Against this complex backdrop the presentations at the World Water Week highlighted several areas where significant progress has been made.

### Sustainability and Behaviour Change

Much has been learned about the need to embed behaviour change with technologies to ensure that sanitation interventions are effective. This is particularly true for communities taking early steps towards achieving good sanitation. The shift from open defecation to fixed place defecation and the improvement

in design and use of traditional latrines are challenges which require long term attention and support.

Top-down investment programmes often score badly in terms of sustainability. In South Africa the push from the government to support sanitation has resulted in the provision of toilets to 11 million people. However, the crucial integration with health, hygiene and training has been neglected. The rapid up-scaling resulted in poorly thought through designs (single pit latrines with unmovable top structures), meaning that the toilets were abandoned once the pit was full. The approach focused on initial infrastructure delivery rather than long term service



delivery, leaving households and local authorities in no position to maintain services in the long run.

During the week there were, however, many examples of successful projects where a bottom-up approach had been used. One example was the Kasese District of Uganda where the District Water Engineer had committed to involve whole communities in the planning of new water and sanitation facilities. In doing so, previously common conflicts over land and access could be avoided.

By focusing on behaviour changes and raising awareness among the public, a demand for sanitation facilities can be created. These people-driven processes may prove crucial for driving sanitation forward particularly in dispersed rural areas.

### Challenging Taboos

In most cultures sanitation is seen as a private matter and is often hard to discuss. Several presenters gave examples of communities where certain members required separate facilities (for example women and their brothers-in-law might not be able to use the same facility). However, most of these examples showed that by investing in early and high-quality community consultation and dialogue, such constraints can be overcome. This 'leit motif' was laid out by Kamal Kar who gave a key note speech in the opening session highlighting how such taboos have been overcome at community and national levels in Bangladesh and in other countries using a programmatic approach known as Community-led Total Sanitation (see Box 5).

Many presenters echoed this theme during the World Water Week, showing that it is possible to challenge taboos and thus create communication on sanitation. A representative from WaterAid Bangladesh shared experiences from a courageous project succeeding in creating a dialogue on menstrual hygiene. Another sensitive subject discussed was how to address the practise of manual scavenging, particularly in India.

#### Box 4: WASH on the Agenda

The use of the term WASH to denote the beneficial interactions between water, sanitation and hygiene, is becoming widely accepted. The WASH programme launched by the Water Supply and Sanitation Collaborative Council, for example, aims to raise awareness around issues of sanitation and hygiene. Evaluation of WASH projects in Kenya and Kerala, India, show that schools working with the WASH programme have more toilets, a higher frequency of students practising handwashing (both at home and at school) and better attendance of girls.

A series of regional ministerial sanitation conferences are also having a positive impact; AfricaSAN reported an increased interest from ministers including ministers of finance; SACOSAN (South Asia) is now preparing for a fourth meeting; Latinosan and EASAN both held in the past 12 months, were the first meetings of their kind in Latin America and East Asia respectively.

### Range of Available Sanitation Technologies

The over-riding message relating to technologies from the week was that there are a wide range of proven and effective technologies that can be effectively used in appropriate situations. A selection of those presented included:

- Various composting toilets (with and without urine diversion) that enable re-use of excreta in agricultural activities
- Shared and community-managed sanitation blocks for dense urban areas, temporary settlements and areas with limited tenure security
- Simplified sewerage which offers a low-water-use, cost-effective alternative to both on-site toilets and conventional sewerage in dense urban settlements
- Waste stabilisation ponds and other appropriate wastewater treatment options
- Decentralised wastewater treatment (DEWATS) which have been successfully deployed in India and Africa.
- Decentralised and centralised composting alternatives
- Mechanised faecal sludge emptying and transporting equipment
- Interceptor stations to enable disposal of faecal sludge in sewer networks

## Prospects and Opportunities

### Excreta as a Resource

Many presentations highlighted the opportunities presented to sanitation by the rising prices in the international food and fertiliser markets. Use of treated excreta as a soil conditioner and fertiliser has been promoted for many years both as a way of improving the marketability of sanitation and as a means of reducing adverse impacts on the environment through the discharge of untreated wastes and subsequent loss of nutrients in the soil. In many cases however the lack of a real market for the products of these systems has constrained their widespread adoption. This is particularly true for systems that use urine-

#### Box 5: Community-led Total Sanitation

In Community-led Total Sanitation the community are empowered to make decisions about their own sanitation situation. Led initially by trained facilitators, the community 'walk through' an analysis of their defecation practices. They calculate how much excreta is generated in the community and build up maps of where the excreta lie around on the ground. They then discuss possible solutions and gradually move towards making a commitment to eliminate open defecation. This approach, which places emphasis on basic management of excreta rather than a particular type of latrine, enables the community to take small achievable steps. It highlights behaviours over infrastructure and focuses on empowered communities. In the countries where CLTS has been used, there is a growing cadre of "community mobilisers" who can spread the approach to neighbouring communities. Key to its success lies in a willingness to confront the real problem (shit on the ground) rather than hiding the issue behind highly technical discussions on latrine designs.



Photo: Thomas Henrikson

diversion at source (in the toilet) as they often require major shifts in private behaviours. The general consensus during the week was that well-designed composting toilets and wastewater treatment facilities would become increasingly marketable over the coming years – thus reducing some of the negative cost burdens previously associated with sanitation.

This is likely to have a significant positive benefit in Sub-Saharan Africa where declining soil fertility, low fertiliser use, inappropriate land and water management, falling agricultural productivity per capita and poverty remain huge challenges.

#### **An Increasingly Professional Sector with Multiple Actors**

It was widely accepted that the perception of sanitation is shifting from a charitable development sector to one with significant economic importance. Part of this shift is reflected in a more mature discussion around the roles of government, NGOs and the private sector. Many presentations illustrated cases where private actors played a key role in service delivery (for example as faecal sludge managers in Freetown, as managers of public toilets in India, and as purveyors of household sanitary ware in Kenya). Several excellent cases focused on the effective use of marketing techniques to place products that were affordable in rural and urban markets, enabling households to aspire to well-designed sanitation goods and services.

The role of the private sector was acknowledged and several large private corporations hosted a workshop under the aegis of the World Business Council for Sustainable Development

(WBCSD) to debate how they can contribute to improved sanitation both “within the fence line” and beyond.

However, attracting the private sector has proven difficult. The need for long term commitments is not always compatible with market demands, and the low income of the target group limits private spending. The role of the government as a regulator is critically important.

#### **Sanitation in the Water and Development Discourse**

Many presenters commented on the specific opportunities provided by this year’s focus at World Water Week on sanitation. Within the field the arguments and ideas around sanitation have been much discussed, but practitioners welcomed the opportunity to debate with water professionals and show how sanitation is *sine qua non* for meeting many of the MDG targets – particularly those relating to reduction of infant and maternal mortality, malnutrition, education and poverty.

## **Challenges and Obstacles**

#### **Urban Growth**

The world’s urban population is massively increasing. The most rapid growth is found among the low income populations in periurban and slum areas. Finding suitable sanitary solutions for these high density areas has proven to be a great challenge. The layout of the settlements is too chaotic for traditional sewage systems, and there is often not enough space for latrines.

Possible options are simplified sewerage, low-cost combined sewerage and community managed sanitation blocks.

Several frameworks have been developed that could be used to develop effective urban sanitation solutions – going beyond the traditional linear solutions towards conventional sewerage-based solutions. These include Household Centred Environmental Sanitation, Strategic Sanitation Planning, and Sanitation 21. The real challenge is to ensure that sanitation for the poor and unserved is on the top of the local political agenda and then build capacity to deliver visionary solutions.

### **Women and Girls**

Evidence shows that girls and women are those who suffer most from lack of sanitation. Visits to public toilets or the search for a secluded spot to relieve oneself is often associated with the risk of rape. In cultures where women are expected not to leave the house, shared facilities or garden latrines may prove to be inaccessible. If school toilets are poorly maintained or shared with boys, girls often choose not to attend classes. This goes especially for girls who have reached the age when they start menstruating. Poor sanitary conditions also increase the workload put on girls and women, since they often are ones responsible for fetching water and for looking after sick family members.

### **Discrete but Coordinated Budgets**

Water and sanitation have traditionally been funded together, with water getting significantly more funding than sanitation. For sanitation programmes to work, what is needed is coordinated inputs from several ministries – usually including the ministries of health (for long term hygiene and sanitation promotion), public works or water (for construction of institutional sanitation and coordination with water investments), education (for toilets in schools) and water resources or environment (for environmental regulation). There was a strong message from the week that discrete budgets for sanitation – linking inputs from several ministries to specific targets and outputs – is the surest way to secure adequate long term funding and the strongest potential coordinating mechanism.

The allocation of sufficient money to sanitation is hampered when the national budget is largely made up by donor money which can be earmarked (e.g. for water supply or HIV/Aids). Sector professionals need to build support in the Ministry of Finance if they are to achieve the needed financial targets.

### **Countries Suffering from Long Term Conflicts**

Several speakers commented repeatedly on the specific sanitation challenges faced by countries suffering from long term conflicts. Specific approaches are needed in IDP camps, refugee camps and areas subject to repeated population movements. National governments in these countries may also be unable to formulate policies and strategies on sanitation,

which may result in a failure to attract donor funding or other external investments.

### **Advocacy and Information**

Despite recent gains, more and better communication is still needed. Plain language, simple terms and strong visuals are powerful when it comes to engaging the public. Calculations of cost-benefits and cost-effectiveness can help governments understand what they are losing right now from not working with sanitation. Finding the right ways of addressing the problem is also crucial. Convincing governments to invest only in the poor can be difficult. Formulations, such as “poor inclusive”, can be powerful to attract investment.

### **Knowledge Gaps**

Though several important areas for new research and ideas remain, many speakers at the conference emphasised the need to (a) communicate the importance of sanitation outside of the sector; and (b) find better ways to spread existing knowledge and capacity at field level.

### **Communicating the Links between Sanitation and Health to Health Sector Professionals**

The importance of clean drinking water for health, for example, has become widely known and accepted. Yet the public perception of the link between sanitation and health remains weak. While the international health agenda is dominated by curative medicine and vaccinations, a critical and highly cost-effective health intervention (basic sanitation and handwashing) remains neglected by health professionals.

### **NGOs and Local Governments with Insufficient Technical Competence**

The correctional shift towards a holistic socio-cultural approach has meant that sanitation no longer is something which falls exclusively under the responsibility of engineers. If the process is driven too far, it may result in a loss of technical expertise. In one seminar a speaker from UNEP warned that NGOs are getting weak in the technical area. Other speakers emphasised the lack of capacity in local governments, particularly in countries which are decentralising.

### **Global and Regional Definitions**

As more and more work is done in the field of sanitation, many speakers called for better monitoring and evaluation of progress. While the international system of the Joint Monitoring Program (JMP) provides an important longitudinal measure of progress, more work is needed to develop meaningful and more detailed parameters at local level. Only then can real progress (from open defecation, to fixed place defecation, to improved latrines, towards sustainable sanitation) be measured.





Photo: Mikael Ullén

## Conclusions and Recommendations

### The State of the Sector – Sunshine and Showers

There is growing awareness of the importance of sanitation. The evidence base for health benefits is robust. Technical solutions exist. However, awareness (particularly among women and children) is not as high as it needs to be. Most decision-makers are more able to imagine contracting HIV/Aids than living without a toilet and political pressures prevent cities and local governments prioritising sanitation. The need for improvement is urgent.

### Practical Ideas –Four Seasons in One Day

Practical ideas and solutions do exist:

- Where access is very low, sanitation is primarily about behaviour change (i.e. Community-led Total Sanitation in Bangladesh).
- Where access increases, sanitation is primarily about improving the quality of the services provided (for example in Ghana).
- In dense urban settlements the additional challenge is to link people's efforts with the city system (i.e., in Kumasi, Dar es Salaam, Karachi).
- In the long term, new technologies hold the promise of a more sustainable future (i.e., eco-cities in China).

People are crucial. New ways of thinking for demand-responsive approaches are being developed and rolled out to address the real needs of the unserved.

### Remaining Challenges – Storms Approaching

Some of the key gaps relate to the need for:

- Local Information – making the case at local level (Cost effectiveness studies, health impact studies, community self-assessments).
- Finance – more money is needed but mostly for long term support (i.e. health extension workers) – this requires new financing mechanisms.
- Government Leadership – success stories all reflect strong government leadership to remove confusions and lead co-ordination (e.g. Madagascar, Ethiopia, India, Bangladesh, China and Rwanda). This is needed in all countries.

The concept that there is an “end point” of water borne reticulated sewerage needs to be more sophisticated. Sanitation has strong links to environmental management, climate change, food security, etc. A new vision is needed that recognises the changing geopolitical landscape. This vision must be the gold standard that is applicable to rich and poor alike.

### Building for the Future – A New Sunrise

Finally, there is a need to enthuse a new generation of sanitation experts and activists. Young professionals need a reason to get into sanitation. A lot is going on to ensure that communities, governments and the private sector participate in the sanitation sector, but little is being done to motivate young people to enter the field. 2008 World Water Week in Stockholm went some way to address this gap.

# Theme Report – Environmental Pollution and Ecosystems

**Lead Rapporteur: Prof. Paul Appasamy**

**Junior Rapporteurs: Ms. Lisen Runsten and Ms. Yin X Yan**

## Context

Globally, freshwater pollution and ecosystem degradation have increased due to increasing competition for water. The impact on ecosystems by flow alteration and pollution from human and industrial wastes is growing. Initiatives to address the problems are limited by a high degree of uncertainty. Inadequate data, complexity of modelling and inability to properly value ecosystem services are often cited as reasons for not taking action. There is a high and often neglected environmental cost of this inaction. At both the global and local levels this failure to act has serious environmental consequences for ecosystems and the human populations dependent on them. Many of the actions for reducing environmental degradation are focused at the local level. While results of these local actions are promising, scaling-up to the river basin and regional levels and the ability to tailor solutions are major challenges.

We cannot continue to manage and develop land and water resources in a way that undermines the life support system which we all depend upon.

## Opportunities for Progress

The 2008 World Water Week highlighted the opportunities for progress on several fronts to address environmental degradation.

### Triple Green Approach

The geography of hunger and poverty often coincides with that of increasingly degraded land. If we are to improve livelihoods, for example in Sub-Saharan Africa, we must simultaneously improve, not degrade, land and water resources. The “triple green” approach combines sustainable agriculture, environmentally sound sanitation practices and water harvesting. Not only can this approach help to meet the Millennium Development



Photo: Frida Lanshammar





Photo: Mikael Ullén

Goals (MDGs) to reduce poverty, but it can also contribute to environmental sustainability through more efficient use of the finite resources of nutrients, land and water.

### Environmental Flows

Environmental flows refers to the timing and quantity of water required to sustain aquatic and riparian ecosystems and the services they provide to people. Assessments of environmental flow requirements have been undertaken over two decades in a number of countries, namely USA, South Africa and Australia. However, widespread assessment and implementation of recommendations is limited. This can be primarily attributed to lack of data, institutional coordination and national targets. A new scientific approach (ELOHA) for estimating environmental flows at the regional or national scales appears promising.

### Virtual Water

The concept of “Virtual Water” provides opportunities for conserving water through trading of water intensive products from water abundant to water scarce areas. By doing so virtual water could be used as a strategy to protect ecosystems. The location choice of water could be adapted to local water availability.

### Payment for Ecosystem Services

Freshwater ecosystems provide many goods and services to people. Payment for Ecosystem Services (PES) is a tool that allows the value of ecosystems to be incorporated into the economic framework

of water management. PES is a contractual transaction between a buyer and seller for an ecosystem service or land-use management practice. Application at the river basin level could mean that a downstream user of water pays an upstream community, organisation or individual to manage the land in a way that ensures a sufficient quantity of good quality water flows downstream. PES is a tool that highlights the need to invest in ecosystems.

### New Models for Understanding Vulnerability and Risk

Modelling of vulnerability and exposure with regard to water resources will enable governments to design better strategies to adapt to climate change. Governments and planners are constantly seeking a better tool box for predicting the future availability of water. Thus, developments in modelling and concepts have provided opportunities to create policies and strategies to better manage water resources and protect ecosystems. These tools are receiving the attention of policy makers and planners, shedding light on responsibilities and risks as well as providing standards for new governance structures.

## Challenges

While there are promising developments with regard to concepts and tools for reducing pollution and degradation of ecosystems, there are also serious obstacles and challenges with implementation. While much is known about the impacts of human activities on ecosystems, very few examples exist where recommendations from these assessments have been implemented in policy or on-



the-ground. Recognising the inherent complexity and uncertainty, the emphasis should be placed on learning-by-doing.

More concerted efforts are necessary for coping with climate change. Adaptation strategies are critical for vulnerable communities. Adaptation generally refers to land and water management actions at the local level. Governments should make informed decisions if social and economic risks are to be avoided. This is challenging because water is a local resource, the availability of which is location specific, while climate change and its impact on ecosystems is global and transcends national boundaries.

## Knowledge Gaps

Several knowledge gaps were identified during the week, such as the need for better tools for monitoring, hazard identification and locating pollution sources. Others include:

### Virtual Water and Water Footprint

While social systems have the option of importing virtual water, ecosystems are more vulnerable since they are dependent on the spatial and temporal variations of local water regimes. Expanding the concept of the water footprint to the whole supply chain will provide a better understanding of the water requirements of a business. Similarly, pollution can also be incorporated in calculations of product life cycles. Future development of these concepts will require improving data availability, methods and standards, and bringing together stakeholders who are involved in the process.

### Wastewater Reuse

Wastewater is an important water resource. One insight is that for almost every user, water has already been used. Reuse of treated wastewater plays a valuable role in development and poverty alleviation, particularly in water shortage situations. But far more research needs to be undertaken on wastewater reuse. Indiscriminate reuse can contribute to health hazards and also to pollution of land and water.

### Environmental Flow and Ecosystems

Modelling of environmental flows of major rivers in the US is underway and many studies have been conducted on rivers in South Africa and Australia. Many projects are also underway in other parts of the world as awareness of the importance of environmental flows increases. However, as new and existing water projects continue to impact and disrupt key ecosystems and cause health problems, there is a need to replicate assessments in other rivers and scale up to basin and regional levels.

### Payment for Ecosystem Services

More research is needed in the valuation of ecosystem services, particularly when non-market services are provided, such as the water purification or flood protection value of wetlands. This need is urgent in situations where water development projects are

planned, so that a complete picture of the costs and benefits associated with that development is provided to decision makers.

## Conclusions and Recommendations

Environmental resources and fragile ecosystems are under threat largely because of “inaction” in many dimensions. While freshwater ecosystems have been strongly affected by direct human activities for centuries, new interactions due to changes in climate are causing environmental damage. These threats require adaptive capacity in institutions as well as ecosystems.

A systemic approach is essential to include adjoining terrestrial and marine ecosystems since they significantly affect the condition of freshwater. Building institutions that can implement the systemic approach is one of the most important tasks to be addressed now. There is a strong need for coordination and promotion of sustainable practices. A high degree of uncertainty in the details of future scenarios remains, but there is an urgent need to act in the face of uncertainty and not wait for more data before certain actions are taken.

The sustainable development of cities requires the active participation of civil society. NGOs can create awareness about the water footprint of many commodities that people commonly use or consume. Changes in values and attitudes are necessary to enable sustainable water use in both urban and rural areas.

Governments should structure the obligations of upstream water users to protect those of downstream users and ecosystems. They can exercise care in designing water projects to avoid disrupting environmental flows and ecosystems. They can compensate or pay for the protection of ecosystems (PES), and also develop policies and make investments in green water. They can assess the environmental, social and economic aspects of water footprints. Governments have to work out a strategic framework for adaptation strategies to counter climate change, which could include early warning or insurance systems. They could also build resilience through financial measures and institutions for adaptation.

Businesses can partner with governments and NGOs in many of the same areas. Businesses should be encouraged to calculate the water footprint of their products and try to develop alternatives that consume less water. They can develop insurance systems for climate change adaptation and also help to build resilience in vulnerable communities. Businesses can develop low cost sanitation measures that can improve the environment in both urban and rural areas, and should avoid converting good agricultural land for biofuels and other development.

International agencies should develop and propagate methodologies for estimating environmental flows and protect ecosystems. Promotion of the “triple green” approach of sustainable agriculture, environmentally sound sanitation and water harvesting by “closing the loop” are also necessary. Agencies can also help to promote the concepts of “Virtual Water” and “Water Footprint” across the world to save water in water scarce areas.



Photo: Neil Chatterjee

# Theme Report – Water and Climate

**Lead Rapporteur: Mr. Jamie Pittock**

**Junior Rapporteurs: Ms. Rebecka Törnqvist and Ms. Claudia Teutschbein**

## Context

The links between climate change and water were discussed extensively throughout the 2008 World Water Week, culminating in two dedicated Water and Climate days. More than 30 international organisations, governmental agencies, knowledge institutes and NGOs contributed to the water and climate sessions.

While much of the discussion focused on adaptation, the links to mitigation were debated as well. There was a consensus that the water sector has to make a contribution to climate change mitigation, and needs to be a leader in adaptation.

## Status of Water Resources

The World Water Week presenters built on knowledge of the limited nature of the Earth's surface and groundwater resources and ecosystems, and the degradation that is occurring, with a number of new and more emphatic findings, namely that:

- Climate change is occurring and is impacting on freshwater resources and ecosystems first and hardest.
- The relative impact of climate change needs to be considered against the demands and threats to water resources arising from growing wealth, consumption and populations and a recent addition to the development agenda.
- Growing water scarcity is heightening the management challenges and potential for conflicts.

## Vulnerabilities in Water Resources from Climate Impacts

The Intergovernmental Panel on Climate Change (IPCC)'s recent reports highlighted the likely changes in water quality and quantity, and with extreme events. Globally, the negative impacts of future climate change on freshwater systems are expected to outweigh the benefits. There was a clear consensus that it was no longer possible to manage water based on stationarity.

The vulnerability of the world's 263 transboundary river basins was a focal point for discussions as interstate agreements

cover only 40 percent of these rivers, and agreements based on stationarity may fail.

## Links between Sanitation, Water and Climate Change

Increasing water scarcity in many parts of the world may further limit access to water for sanitation, and consequently exacerbate health impacts and limit the ability of natural ecosystems to assimilate wastes. In large cities water scarcity is reducing the self-cleaning capacity of sewers and flooding is exacerbating stormwater overflows and resulting pollution. Water supply and treatment is likely to become increasingly energy intensive and expensive with climate change. Pumping will likely be needed from longer distances and greater depths and lead to further depletion of aquifers worldwide and increased application of water treatment and desalination. There was also discussion of the opportunities for human waste to be used in biogas generators as an energy source.

## Progress

There is an increasing degree of knowledge about the nature of the climate change challenge, and most speakers emphasised that enough is known to start taking action now. Many presentations highlighted major adaptations that are being applied now, especially no regrets measures like restoration of ecosystems as infrastructure.

Progress in developing the institutions required to manage climate adaptation in the water sector, ranging from enhanced local institutions, to river basin organisations, to various national plans, was evident. Concern was raised at poor integration of national adaptation plans with national sectoral plans. New mechanisms are also developing in existing international frameworks such as the watercourses conventions for transboundary river management.

A high level discussion between developed (Netherlands and Denmark) and developing (Indonesia, Costa Rica and Lesotho) country ministers saw apparent agreement between them on

ways forward in search of wider agreement on solutions on adaptation that will be taken forward to future events. These include the 5<sup>th</sup> World Water Forum and UN Framework Convention on Climate Change (UNFCCC) conferences of parties.

### **Prospects and Opportunities for Further Progress**

There was widespread discussion on the institutions needed for better adaptation at the local, basin, national and international scales.

A great many practical adaptation tools and methods were identified during the World Water Week. The EU proposed a useful schema with three classes of proposed actions to enhance: a) human capital, b) green infrastructure – working with nature to minimise climate impacts, and c) grey infrastructure – climate proofing existing and new infrastructure.

A group of multi-lateral development banks stated that they will continue to consider funding for all “no regrets” projects and noted that funding is generally not the limiting factor where projects are well prepared.

### **Challenges and Obstacles to Progress**

Water professionals are familiar with: the lack of integrated decision-making in planning and governance; drivers of increasing water demand; and limited capacities of developing countries to manage water better.

The World Water Week raised new concerns at climate change policies for generation of low carbon energy using water, and greater storage and diversion of water, because they may increase water scarcity and further impact on freshwater habitats.

### **Knowledge Gaps**

The decline in hydrological monitoring networks and lack of knowledge on the likely impacts of climate change on water resources and ecosystems saw many urge major investments to plug these gaps. Knowledge gaps identified include methods and data to: downscale climate models; distinguish climate change from variability; assess the impacts of climate change on groundwater; understand the relationship between the impacts of glacier and snow pack melt on hydrology; and see the inter-linkages between energy and water and climate.

It was also strongly argued that there would always be a large degree of uncertainty concerning the likely impacts of climate change on water resources and ecosystems, and that societies and governments need to commence adaptation measures in spite of the uncertainties.

Publication of experiences and lessons in climate change adaptation was urged so that these can be drawn on by the global community. The World Meteorological Organisation (WMO) proposal was supported by key participants for the establishment of a global Climate Information Framework, to capture and make available information to assist adaptation efforts.

### **Regional Dimensions**

The 2008 World Water Week included a focus on climate and water issues in three key regions: Africa, Asia and the Himalayas, and Europe.

African presenters emphasised the need to invest in adaptations to cope with climate variability. Presentations highlighted the progress a number of countries had made in developing national plans and vulnerability assessments.

In Asia at least 1 billion people – depending mainly on the “Himalayan water towers” – are projected to be affected by decreasing fresh water availability by 2050. The Asian Development Bank reported that it is supporting capacity building through interdisciplinary collaboration and integration of adaptation strategies in national water policies.

The European Commission outlined its climate adaptation white paper that it plans to finalise and publish in late 2008. The paper plans to assess proposed adaptation measures against eight principles: synergies; no regrets; the precautionary principle; solidarity, flexibility and subsidiarity; knowledge; proportionality; and sustainability. Presentations highlighted the role of river basin institutions in managing adaptation, growing water scarcity in southern Europe, and the likely impacts of flooding, and on river navigation and hydropower.

### **Conclusions and Recommendations**

The 2008 World Water Week discussions represented a more informed appraisal of the impacts of climate change on water resources and ecosystems, and greater confidence in the emerging suite of practical response measures. Key conclusions and recommendations emerging from the week are:

#### **Knowledge**

A lot has been achieved but a lot more remains to be done. Better communication is required to inform and encourage local communities and governments, to overcome the perception of adaptation as a complicated process requiring more expertise before adaptation can commence.

Recommendations:

1. All institutions, especially governments, should support the WMO's proposal for the establishment of a climate information framework to make tailored climate change knowledge more readily available for water managers through appropriate channels to inform responses at the local and regional scales.
2. Further debate is undertaken at upcoming events ( including World Water Weeks, World Water Forum, and Ramsar Convention and UNFCCC CoPs), on issues relating to climate change and water, such as: the links between climate, energy and water; taking good decisions despite uncertainty; and ways to better mainstream and upscale response measures.



3. Governments need to maintain and enhance hydrological and meteorological measurement station networks, especially in developing countries.

### Impacts and Adaptation

A clear consensus emerged that the primary threats to water resources and ecosystems emerge from greater wealth and consumption and increasing populations. These threats will be exacerbated by climate change and must be addressed together.

Recommendations:

4. Better measures against the major threats to water resources and ecosystems, including greater water consumption and climate change, are urgently needed: all institutions should begin or enhance their measures for adaptation to climate change and mitigation of increasing water demands now. No regrets measures that should be targeted as priorities include: increased water use efficiency; treatment and re-use of wastewaters; application of virtual water and water footprint methods for better sourcing of thirsty commodities; enhanced rainwater harvesting; and investment in ecosystem restoration as infrastructure.
5. All institutions, particularly governments, should avoid maladaptations and better consider sustenance of water resources and ecosystems in crafting their climate change policies.

### Local Scale Adaptation

Discussions identified a number of key factors for successful adaptation at local scales. These include local ownership and visible social and economic benefits or the demonstrable avoidance of losses. Predictability of funding more than the scale of funding was identified as essential for sustaining adaptive institutions. More work is required to identify how to better upscale and mainstream successful pilot projects. A dearth of peer-reviewed and published case studies of local adaptation lessons learnt is hindering development of more effective climate change responses. There may have been too little discussion of the perspectives and needs of local people. It appeared that many governments were struggling with decentralisation.

Recommendations:

6. All institutions, especially local institutions and NGOs, assess and publish lessons from their adaptation work.
7. National and international institutions redouble their efforts to learn from and support local institutions to undertake climate change response measures.

### National Scale Adaptation

Country level planning has begun in many nations, but the levels of planning, integration, financing and implementing vary considerably. In particular, more effective integration of

national climate change and sectoral plans is required. There was extensive debate of effectiveness and integration of processes under the UNFCCC for national adaptation and mitigation. The high level debate at the World Water Week highlighted the potential for developed and developing country governments to agree on key climate change responses, and for adaptation policies to bring governments together.

Recommendation:

8. Governments strive to develop more effective water and climate change plans, including better integration of good water resources management into climate change and other national policies. In particular, developing country governments and donors should seek more effective means of integrating climate change adaptation into national conservation, water, poverty and development plans.
9. All institutions support developed and developing country governments to continue the productive discussions seen at the World Water Week on climate change adaptation and encourage them to reach global agreement on implementation measures, including for UNFCCC CoP15.

### International and Regional Development Organisations

A substantial commitment to supporting better water and climate adaptation was expressed. Development banks and aid agencies outlined their plans to collaborate to identify best practices in adaptation and fund such action, and called for better project proposals to fund. Swedish sponsored "International Commission on Climate Change and Development" will report in 2009 on how poverty reduction strategies should consider climate change. The debate over whether climate change adaptation should occur as part of or in addition to poverty reduction funding and programmes was not resolved.

Recommendation:

10. All institutions support the stated intention of the development banks and aid agencies to identify and fund best climate change adaptation practices. Donors should find more flexible mechanisms for funding integrated national conservation, water, poverty and development plans that incorporate climate change.
11. Donors and developing country institutions should foster the debate about the interrelationship between water, poverty reduction and climate change policies, and funding mechanisms should be fostered in relevant international fora including the World Water Week and the 5<sup>th</sup> World Water Forum.

### International and Regional Treaties

Treaties are drivers for better adaptation. River basin treaty organisations, such as those for the Rhine and the Danube, outline practical adaptation actions they were taking to manage water



quality, flooding and infrastructure. The UNECE Watercourses Convention demonstrated the advantages of an effective treaty process. There were calls for European governments to ratify the universal membership amendment. Similarly, many presenters called on governments to ratify the 1997 UN Watercourses Convention so that it may enter into force.

#### Recommendation:

12. Relevant national governments that are yet to do so should ratify the UNECE Watercourses Convention's universal membership amendment, and also the 1997 UN Watercourses Convention so that these measures may enter into force.

#### Industry sectors

Outside the finance, water, food and beverages sectors, relatively little business engagement on climate issues was evident at this World Water Week.

- a) Finance sector. Financial institutions present at the World Water Week indicated their desire to support water and climate adaptation projects more extensively but said they lacked adequate funding applications. Better communication of requirements and support to develop better applications is required.
- b) Energy sector. Understanding of the links between climate, energy and water was a major issue developed at this World Water Week.
- c) Water and sanitation sector. New data was presented at this World Water Week highlighting both the threat from climate change to water supply and sanitation, as well as the contributions this sector can make to mitigation through greater energy efficiency and conversion of waste into fertilisers and biogas for energy generation.
- d) Agriculture, food and beverages sector. Virtual water, water footprint and water stewardship were themes further developed at this World Water Week with a focus on agriculture and the implications of greater water scarcity, including that

induced by climate change. These concepts could be applied as adaptation tools.

#### Recommendations:

13. Integrated decision-making is critical. Water professionals and institutions need to redouble their efforts to engage other sectors more effectively to "get water out of water."
14. The sanitation sector is urged to consider the issue of climate change adaptation in its agenda.

The 2008 World Water Week discussions advanced consideration of climate change adaptation and sustenance of water resources and ecosystems in four key ways, by:

1. Framing the threat of climate change more precisely within the broader set of challenges for better water management;
2. Agreeing that adaptation should start now despite the current level of uncertainties, and identifying a suite of practical adaptation measures that can be applied immediately;
3. Promoting a better balance and linkages between water-related climate adaptation and mitigation measures;
4. Identifying key knowledge gaps to be filled over time.

This year's World Water Week debate primes upcoming events, including the 5<sup>th</sup> World Water Forum and UN FCCC CoP 15, to further advance humanity's efforts to better manage climate change and water. Parties to the UN FCCC CoP 15 should note this message from the water sector: climate change is unequivocally impacting on water resources and ecosystems, and the water sector is ready to contribute to climate change mitigation and lead in key adaptation measures. Governments need to take more care to ensure the climate response measures that they adopt do not further impact on water systems. The water sector needs government support to accelerate climate change adaptation, including better integrated national sectoral plans and more flexible provision of resources for implementation.



Photo: Mats Lannerstad

# Theme Report – Transboundary Waters

**Lead Rapporteur: Dr. Marius Claassen**

**Junior Rapporteurs: Mr. Jonathan Kvist and Ms. Ella Thomason**

## Context

Growing populations and accelerated social and economic development increase pressure on water resources and are leading to water scarcity in many regions. A particular concern is food security. One of the biggest tasks in developing countries is to ensure food security for a growing population. Increased productivity in the agricultural sector is essential, but growing enough food will still require large amounts of water. The recent volatility in food prices put global food security under the spotlight but local food security is particularly vulnerable to climate change. The challenge is to find sustainable ways to produce more food with less water. Professor John Anthony Allan, the 2008 Stockholm Water Prize laureate, suggested that individuals should consider reducing their water footprint from 5 cubic meters per day to 2.5 cubic meters per day, particularly by adopting a vegetarian diet. Such savings on the demand side will go a long way to balancing consumption and sustainable production. Increased variability in water availability will require investment in water infrastructure. Water security is a necessary condition for durable social and economic development and countries often share water resources upon which their development depends.

## Progress made

Vulnerability at the local level often results from a lack of access to resources and the inability to convert such resources to food, health and wealth. Solutions to these challenges, however, often lie at different scales from which the symptoms arise. For example, the livelihoods of those living in the Okavango Delta may be affected by agricultural development in Angola and water demands in Namibia. The predictions of higher variability related to climate change exacerbate the problem in such water scarce areas.

The concept of virtual water is firmly established but its application is proving to be a challenge. While the conventional approach to virtual water relates to the amount of water required to produce a particular product, migration of people also changes demand patterns. It may seem that sharing water between countries is already complex and that the extension of this to virtual water would compound the conflict, but it could act as a tool to facilitate cooperation. Countries that understand that their development depends not only on the water sources within their jurisdiction may have greater acceptance of a transboundary approach. In politically charged regions, the reliance on virtual water being imported is often seen as a security issue as most countries aspire to be as food self-sufficient as possible.



Participants in the 2008 World Water Week agreed that governance, and in particular the need to link actors and drivers, is important. The “trialogue model” was presented and describes the relationship between government, society and science. Many speakers highlighted the need for participation in the governance process. This includes local issues or local conflicts over water. Gender issues were discussed and it was agreed that women should play a greater role in water management. There is also a need for a better understanding of the different constituencies in the “society” cluster.

There is a shift in thinking from a focus on water sharing to benefit sharing. Water resources can be deployed to multiple uses, such as hydropower, agriculture, domestic supply and tourism. These “benefits” from the same resource can often accrue to different riparian countries. In particular, the social and economic value lies in the benefit and not the resource. Investment and inputs are needed to generate these benefits. Thus the sharing of responsibilities is equally important.

There are different views on the utility of the Integrated Water Resource Management (IWRM) paradigm. Some argue that the approach promotes devolution of decision-making, therefore making it more difficult to solve problems at larger scales. In applying IWRM, practitioners should be careful not to focus just within the basin, since solutions are often to be found outside the basin. Examples of such solutions are virtual water trading, interbasin transfers, migration, and regional political and economic processes. The experience with implementing IWRM is that it requires a lot of funding, especially in a transboundary context (such as the Mekong Commission and the Nile Basin Initiative). A realisation of the challenges associated with climate changes may increase the need for funding and speed up the implementation of IWRM.

Solutions should be sought outside of the problem area, particularly because virtual water transcends conventional boundaries. Furthermore, effective governance is required to achieve development outcomes. Such outcomes will be a function of benefits derived from water resources and therefore the subject for discussion should be benefit sharing, not water sharing.

## Opportunities

The benefit sharing approach, linked to multiple uses of water can go a long way towards poverty alleviation and securing livelihoods. The concept of benefit sharing has been broadly accepted, but there are not enough concrete examples of benefit sharing being implemented.

There have been significant advances in technologies to monitor and assess the biophysical environment and access data. Google Earth has become the norm on spatial orientation and remote sensing provides high resolution images, which is combined with powerful data processing to make spatial data more accessible. Furthermore, better and more affordable field

equipment combined with faster communication networks, allows for a more in-depth understanding of the biophysical environment. There is now a need to put this data and information to good use in effective management of transboundary waters in support of development priorities.

Agreements and conventions can facilitate transboundary water resource management, but these need to be ratified and implemented. Agreements on how resources and associated benefits are shared require more than political cooperation. It is argued that conventions are often not signed and ratified by countries because they are not applicable to countries not sharing water resources and not even necessary for those that do share waters. In some cases, it is more important for riparian countries to harmonise their relevant policies and laws. National sovereignty is also seen as a barrier to ratifying conventions. Domestic development and domestic concerns has been prioritised in, for example, Latin America. Another reason to why conventions are not implemented is a lack of agreements on data and knowledge. Agreements often focus on the resource and therefore do not provide the flexibility to optimise benefits. They also need to be updated continuously, particularly in the context of climate change and global change. Participants of the World Water Week showed strong support for the implementation of the UN Convention on the Protection and Use of Transboundary Watercourses and International Lakes, which intends to strengthen national measures for the protection and ecologically sound management of transboundary surface waters and groundwaters.

Many tools and approaches are available. These need to be consolidated and good practice must be identified and implemented. “On the ground” implementation of research findings is called for. This will highlight areas where more scientific knowledge is required, such as groundwater. Wells are drying up and require practical solutions to ensure the sustainable use of groundwater. At a regional scale, the EU's ERA-NET has set research agendas which are based on Europe rather than in individual countries. Global alliances and cooperation are necessary to advance knowledge, secure and direct funding and promote cooperation.

## Challenges

It is clear that advantages or benefits can often be achieved through supranational interventions, but the mandate for such interventions is hampered by national sovereignty. Approaches need to be developed to achieve regionally optimal water resources development, while respecting national sovereignty.

Adaptation to climate change at both the local and global level is now on many countries' agendas. The response to climate change should include the combined groundwater and surface water cycle. Adaptation to climate change should focus on meeting the Millennium Development Goals (MDGs) but

also ensure that the risks to global social and economic growth are mitigated. The allocation of financial resources to meet these challenges should combine private and public sources. Institutional processes should support adaptation to climate change, particularly because decision-making is difficult under conditions of uncertainty.

While much progress has been made to express benefits in financial terms, these analyses often neglect the social and cultural benefits or losses.

### Data and Knowledge

A key constraint to transboundary cooperation is the imbalance of data and knowledge in basin states. Such imbalances can lead to weaker and stronger negotiation positions and produce less stable outcomes in the long term. Knowledge sharing across boundaries is crucial because all countries do not have the same capacity to dedicate resources to particular research areas but still require the knowledge gained from such research. There is therefore a need to strengthen water-related data, information and knowledge; in particular among countries in weaker positions. In transboundary aquifers, particularly in Africa, there has been focus on improving understanding through data collection, modelling, monitoring and research to provide a holistic overview of the situation on the continent.

A good example of the implications of data and knowledge is the contentious debate on biofuel. These discussions are not always based on scientific fact, which leads to subjective arguments. The biofuel debate is multidisciplinary but one area which has not been a key focus yet is the water resources required and the effects that biofuel production will have on transboundary issues. The water needs of additional primary production and

biofuel processing may mean taking water from current downstream users, whereas new entitlements may require renegotiation of rights and reallocation of water.

River basin commissions can play a regional role in increasing data availability and knowledge. There are some challenges, however, in increasing the effectiveness of such bodies. Upstream states are often less interested in participating in river basin organisations (RBOs) than downstream states, but that depends on the balance of power and existing agreements and structures. While “fixed” agreements may be much easier to implement, flexible agreements are needed to adapt to change.

In the context of the Regional Water Operators Partnership Initiatives, corporations are developing regional networks. In Arab and Latin American countries in particular, conferences are taking place and networks are developing. The effectiveness of the activities and the coordination and information sharing between countries within those networks are increasing. This promotes sharing of knowledge and experiences in the countries. Capacity building is taking place and one example of a platform for this is the Water Integrity Network (WIN).

Ultimately, the generation of knowledge should focus on the realisation of social and economic benefits – thus “science in service of society”.

### Regional Dimensions

While “transboundary waters” addresses those water resources which traverse more than one country, the concepts of virtual water and water footprints highlight the fact that water is in fact shared by countries beyond those within which it physically lies. For example, food aid is often required in countries where drought has led to crop failure. This substitute food is often produced in countries that do not share water resources



Photo: Manfred Matz, SWI





with the receiving country, but the recipients benefit from the use of the water to produce food.

The link between (shared) water resources and development in Africa is particularly important. Much progress has been made, but there is a need to strengthen structures such as the African Ministers Council on Water (AMCOW) to support water for growth and development. This is in line with the African Union and NEPAD objectives of strengthening development by Africa for Africa. Currently, donor-driven investment is still overwhelming in Africa.

There is a rapid rate of political, social and economic changes in the southern African region, but practitioners are optimistic that “creativity thrives at the cusp of chaos.” Experience from the Baltic Turntable Initiative is demonstrating ways to manage the legacy of political change, such as the collapse of the Soviet Union and the Iron Curtain. A UNDP/GEF project on transboundary waters focuses on advancing water governance by targeting parliamentarians and the media, developing approaches to ensure integrated development of surface and groundwater, and how this can be achieved through financing and investment.

There have been opposing views of water-sharing in the future, ranging from “no conflicts over water” to “water wars”. There are examples where cooperation prevails over conflicts, both through signed and implemented treaties and through positive cooperation in the absence of formal agreements. The Nile Basin Initiative is a good example of a platform for collaboration between involved states.

## Conclusions

The deliberations during the 2008 World Water Week demonstrated a shift in thinking. Focus moved from the biophysical water resource to the socio-political processes that can bring about positive change in transboundary waters. Participants agreed that good knowledge and data are necessary to manage the resource effectively. Without a sound socio-political process, however, such knowledge will not be translated to social and economic benefits. Such a process suggests that:

- more dialogue is needed,
- transboundary waters becomes a global issue through trade and migration, and
- empirical, interpretative science and advocacy are needed to achieve development objectives.

Transboundary waters involve much more than national boundaries. While national boundaries represent barriers to addressing development challenges at the appropriate scale, there are many other barriers that prevent effective conversion of water resources to social and economic benefits. These barriers, which can be political, policy, economic, trade, sectoral, social, cultural, environmental, or caused by lack of data or knowledge, must be understood so that they can be overcome. Approaches to addressing transboundary problems must always be anchored in the specific context and managed at the appropriate scale.





Photo: Manfred Matz, SIWI

# Theme Report – Water Resources Management

**Lead Rapporteurs: Dr. Sara Ahmed and Mr. Aly Kerdany**

**Junior Rapporteurs: Mr. Andrew Quin, Ms. Laila Kassem and Ms. Marijane Jonsson**

## Context and Major Insights

### Understanding Integrated Water Resources Management (IWRM)

The use of the word management in this report relates to all aspects of planning, developing and managing water resources. Uncoordinated action in managing water resources, both at regional and national levels, was highlighted as a pervasive problem. Many examples and cases demonstrated that integration is necessary. Fewer examples, however, showed how to ensure that integrated management is carried out on a large-scale. This applies not only to water institutions, ministries and organisations, but even more so in how other sectors manage and impact water. Some main areas with significant water footprints include the planning and managing water resources for use in food production, employment generation and energy production.

It is still a great challenge to strike a sustainable balance between the three “E’s” – equity, economic efficiency and environmental sustainability – while managing water resources. Increasing populations and demand for water to satisfy current policies of economic development, livelihoods and lifestyle changes are impacting the availability, quality and sustainabil-

ity of water resources. At the Stockholm Water Prize Laureate Lecture, Prof. John Anthony Allan called IWRM a political process that is missing the “A” for allocation. What is needed is “IWRAM.” The concept of “virtual” or “embedded” water helps us to understand water consumption patterns and change them to minimise our water footprints.

### Uncertainty and IWRM: Managing Water in the Context of Climate Variability

There was general consensus that increased uncertainty and variability due to climate change makes it difficult to strike the right balance with the 3 E’s. Water managers can no longer be guided by the framework of “stationarity” – decision-making based on the historical variability of water availability (precipitation, etc.) and flow. Adaptation policies will have to understand both the increasing complexity and uncertainty underlying water management. Examples from Europe (Spain, the Danube and Rhine River Basin Plans) illustrated the need for stronger and better integration of all water-related sectors, including transport and tourism. To ensure water efficiency, conjunctive management or wastewater reuse based on innovative technology, and pricing mechanisms are needed. Frameworks such as

the EU Water Directive or the Alpine Convention also illustrate the need for regional collaboration, as neither water flows nor climate change respect geographical boundaries. Adaptation approaches in the developing world need to respond flexibly. Both “hardware” (e.g. small-scale water harvesting technologies) and “software” (an enabling environment) are needed to facilitate resilience. Access to resources, knowledge, skills to diversify livelihoods and capacity building for climate governance are all critical.

### **Water Governance, Equity and Participation**

Many noted that greater focus was placed on the economic and financial aspects of water management. Less attention was given to the environmental (water for nature) and social and equity impacts of poorly managed water resources. Discussions were largely bereft of any meaningful understanding of the complex relationship between water, poverty, gender and other dimensions of social exclusion. The challenge of meeting the MDG sanitation targets in Asia for example, are as much rooted in the absence of good governance and strong leadership, as they are in cultural practice and in the need to provide space to articulate voice, seek information and access alternative, low-cost technological options. While there has been progress in the decentralisation of water and sanitation services across Asia – the devolution of funds and decision-making authority is not concomitant with the devolution of responsibilities. Poor capacity, particularly in local governments, remains a challenge. Community-Led Total Sanitation (CLTS) provides an alternative approach in facilitating sanitation from the bottom-up through collective decision-making and action based on strong social networks of cooperation. However, a word of caution is needed as “community-led” approaches can often be based on coercion of the poor and most vulnerable in the name of meeting community goals.

### **Managing Trade-offs: Water and Energy**

At the macro-economic and political level, decisions must be made on water-related trade-offs, especially in the energy and food security nexus. For example, biofuels and food may compete over scarce water and land resources. Biofuels may contribute to a reduction in greenhouse gases in the long-term but without appropriate soil and water conservation or synergies with the cultivation of food crops they can distort markets and destroy livelihoods, particular for poor farmers.

### **Water Conflicts**

Water management is by definition, conflict management. Conflicts over water are deeply embedded in the social hierarchies that structure our everyday lives. These include relations of power based on gender and identity as well as competition in the face of scarcity, poor allocation mechanisms and the

absence of clear water rights or entitlements. However, facilitating access to water and sanitation services is also at the heart of peace-building processes in fragile economies as examples from India, Uganda and Darfur illustrated. Multi-stakeholder dialogues, spaces for participation and negotiation and the use of a wide-range of culturally appropriate media comprise some of the conflict sensitive approaches discussed.

## **Challenges**

### **Valuing Water?**

Water remains a multi-faceted commodity of economic and social value. It is increasingly seen as a political good. Water is higher on political agendas than before but this increases the risk of water being used for political gains. While the world has not witnessed the “water wars” predicted more than a decade ago, competition and conflicts over water in communities and across regional or national boundaries are still often violent. Negotiation or dialogue platforms are needed at a scale which will require better-equipped and sensitive facilitators.

### **Urbanisation**

Growing urbanisation with contrasting mega cities and poor peri-urban areas adds complexity and challenges to the planning and management of water resources. While Public-Private Partnerships in Asia are beginning to mobilise key actors (e.g.



Photo: Thomas Henrikson

the City Sanitation Strategy in Indonesia or Urban Renewal Mission in India), prioritisation and political will are important to sustain participatory planning in the absence of strong institutions. Building consistent policy and regulatory frameworks is a challenge when governments change. The multiplicity of actors also raises questions about accountability and transparency.

### **Financing Innovations**

While the challenge of leadership and resources for meeting the MDGs persist, there is liquidity in the private sector. Successful examples of micro-finance for water and sanitation from Egypt, the Philippines, Mexico, India, Kenya were cited. Financing water utilities should not be too difficult as they generally have a “triple A” credit rating with banks. Still, corruption and water losses remain to be addressed. The challenge lies in developing bankable projects and strengthening the capacity of utilities, local governments and regulations to manage the process and project development. Success stories need to be better documented and shared.

There is a lot of experience targeting increasing funds in the water supply and sanitation services. There is little work, however, on financing water for food, agriculture or the “soft” side of our business: management of water as a “public good”, costs related to better management, etc.

Current agricultural production methods are unsustainable. They involve large-scale groundwater overexploitation and widespread river depletion, which threaten biodiversity and aquatic ecosystems. The key is to find ways to produce more food by using less water and to ensure that biodiversity losses do not threaten ecosystems.

### **The Right to Water**

Water sector reforms in many countries have adopted a human-rights based approach (e.g. South Africa, Kenya), but the legacy of past inequalities in water allocation and distribution persists. In addition, there is increasing, often aggressive, competition from other sectors (industry, energy, agriculture) while mechanisms for ensuring rights are not in place.

### **Monitoring Progress: Indicators**

Monitoring progress on integrating water resources management and MDG deliverables is challenging. While there are adequate indicators for water supply and sanitation, indicators for monitoring IWRM were debated. Several committed organisations are willing to work on this under the auspices of UN-Water.

### **Funding Adaptation**

Discussions on the impact of climate change on water were widespread among the sessions. African leaders pointed out that discussion on climate change in the North and West mainly focus on mitigation strategies and efforts to offset the carbon footprint. A strong appeal was made for international forums to

discuss climate change from the water perspective, especially on adaptation strategies for more vulnerable countries and populations. Successful adaptation is primarily achieved through better and more integrated water resources management. Many African countries have lower storage capacity than developed countries. Increased financing targeting infrastructure to improve water security was called for. Government representatives of Denmark, the Netherlands and others gave positive official responses to this request and the need to focus discussions on adaptation and targeted strategies.

## **Opportunities for Progress**

### **Virtual Water: Measuring Consumption**

Acceptance by decision and policy makers of water-related economic concepts such as virtual water is a great opportunity for getting balanced integrated strategies to calculate trade-offs for more efficient, environmentally sound and equitable planning, management and development of water resources. Understanding consumption behaviour based on simple calculations of our virtual water footprint can help raise awareness and build political accountability for sustainable water management (see: [www.waterfootprint.org](http://www.waterfootprint.org)). However, it also raises complex political questions – should water scarce regions import food rather than grow their own? How then will this be affected by unequal trade relations? What is the best means to advocate a reduced Corporate Water Footprint?

### **Dialogues and Multi-stakeholder Partnerships**

Partnerships and stakeholder platforms add value to the process of planning and managing shared water resources in large cities, such as Lima, and in rural areas and river basins. Partnerships are also the key to leveraging more funds and political commitment for the sectors’ needs. Multiple uses of water, inter-sectoral planning and good governance are being seen as opportunities to better learn how to jointly plan and manage resources in an integrated manner (e.g. the EMPOWERS approach in the MENA region – Middle East and North Africa).

Success stories from the private sector in leveraging funds through loans or contracts demonstrated the need for strong regulatory frameworks and well defined water governance structure. These are necessary both as a consumer protection function to ensure equity, environmental protection and public health and also to minimise opportunities for corruption and guarantee water and economic efficiency.

### **Banking on Innovation: Wastewater Reuse**

There are more opportunities and technological advancements to improve reuse of water. Adopting proper wastewater management makes wastewater an additional water resource. In some cases, these new resources bring additional economic value





from “free” nutrients, made more valuable by current increases in fertiliser prices and shipping/fuel costs. New guidelines and tools prepared by WHO now recognise that very high standards for re-using wastewater may be difficult to follow and are thus sometimes ignored. New guidelines currently being developed will enable more access and potential use of wastewater in areas where they may not have been used before, especially in irrigation and recharging of groundwater aquifers.

Ecological sanitation (eco-san) is also an established, cost effective, and environmentally sound option that can help to solve our sanitation deficit and reduce the pressure on scarce water resources while improving living conditions and lowering risks to human health.

## Conclusions and Recommendations

Strengthening the enabling environment at the national and regional level must be prioritised. It can be achieved through improved policies, institutional arrangements, regulation and adoption of instruments and tools for more efficient and equitable water use and management.

Dialogue needs to be further encouraged and fostered between science, government and society. The dialogues should focus on calculated trade-offs and negotiated priorities to reach the careful balance between the three pillars of integrated water resources management: equity, efficiency and environment.

Although many lessons have been shared and success stories documented, there is a need to strengthen knowledge management in the context of capacity building and shared learning. More intense work is required to strengthen those forums.

Up-scaling success stories and pilots is needed if we plan “to go for gold” and address the MDGs within the time frame.

However, up-scaling has to be done with caution as wide-scale implementation may have unexpected adverse effects.

Better regional and transboundary integration – especially within the context of climate change risks – is needed. Calculated regional and in some cases global integration of approaches in parallel to national efforts are crucial. Economic trade-offs and negotiated sharing of benefits across political borders would result in better and more efficient use of resources.

Despite global, regional and national efforts, crisis management remains a preferred choice by decision-makers. The other more efficient choice may be a demand responsive approach to water resources management. There is a feeling that this is the only choice we can really afford in the current global context.

In closing, the World Water Week also offered many short provocative messages that we should take back with us, some of which are listed below:

- Reduce your water footprint. Consider the water impact of your diet and lifestyle.
- Promote the ratification of the UN Watercourses Convention.
- Good water governance is about leadership not simply financial resources.
- IWRM is not only a technical process. It is a political process across sectors.
- Be realistic. Develop new health standards for reuse of wastewater depending on local conditions and realities.
- No one dies due to lack of water or poor sanitation in Stockholm. Why then in other parts of the world?
- We need more infrastructure and more water storage capacity to be able to address water security.
- Water management is not rocket science. It is common sense.

# Convening Organisations

5<sup>th</sup> World Water Forum Secretariat  
Acacia Water  
Academy for Educational Development (AED)  
African Development Bank (AfDB)  
African Ministers' Council on Water (AMCOW)  
Agence Française de Développement (AFD)  
Akvo  
An International Centre for Soil Fertility and Agricultural Development (IFDC)  
AquaFed  
Arghyam  
Asia-Pacific Water Forum (APWF)  
Asian Development Bank (ADB)  
Bali Fokus, (Indonesia)  
Bangladesh Centre for Advanced Studies (BCAS)  
Basic Needs Services (BNS, Philippines)  
BothENDS  
Bremen Overseas Research and Development Association (BORDA e.V.)  
Building Partnerships for Development in Water and Sanitation (BPD)  
Cambodian Association of Civil Engineers (CACE),  
Cambodian Education and Waste Management Organization (COMPED)  
Capacity Building for Integrated Water Resources Management (Cap-Net)  
CARE Middle East and Eastern Europe Regional Management Unit (MERMU)  
CARE USA  
Central Asia and South Caucasus Water Utilities Association (CASCWUA)  
Centre for Science and Environment (CSE)  
Centre on Housing Rights and Evictions (COHRE)  
Centre Régional pour l'Eau Potable et l'Assainissement à faible coût (CREPA)  
Chalmers University of Technology, Sweden  
Chinese Society for Environmental Sciences (CSES)  
Church of Sweden  
CIRCLE ERA-Net  
Coalition Clean Baltic (CCB)  
Commission on Climate Change and Development (CCD Commission)  
Conservation International  
Consortium for DEWATS Dissemination (CDD, India)  
Co-operative Programme on Water and Climate (CPWC)  
Council for Scientific and Industrial Research, South Africa (CSIR)  
Creative Slovakia  
CRUE ERA-Net  
Danish Hydrological Institute (DHI)  
DBL – Centre for Health Research and Development, University of Copenhagen  
Department for Infrastructure and Economic Cooperation, Sida (INEC)  
Department for International Development, UK (DFID)  
Department of Econometrics, University of Geneva (UNOG)  
Department of Water Affairs and Forestry, South Africa (DWAF)  
Department of Water and Sanitation in Developing Countries (Eawag/  
SANDEC)  
Department Public Health and Environment, World Health Organization (WHO-PHE)  
Development Research and Technological Planning Center (DRTPC)  
Development Workshop Angola (DW)  
DEWATS  
Diageo  
DIVERSITAS  
Dutch Ministry of Foreign Affairs (DGIS)  
Earth Forever Bulgaria  
Earthscan  
Eawag: Swiss Federal Institute of Aquatic Science and Technology  
EMPOWERS Thematic Group (ETG)  
European Commission (EC)  
European Commission's Directorate-General Environment  
European Investment Bank (EIB)  
European Union (EU)  
European Water Partnership (EWP)  
Euroteleorman Romania  
Excellent Novel and Radical Ideas (EXNORA International, India)  
Faculty of Life Sciences of the University of Copenhagen  
Federal Institute for Geosciences and Natural Resources, Germany (BGR)  
Federal Ministry for Economic Cooperation and Development, Germany (BMZ)  
Federal Ministry of the Environment, Nature Conservation and Nuclear Safety, Germany (BMU)  
Food and Agriculture Organization of the United Nations (FAO)  
Formas  
Foundation for Educational Innovations in Asia (FEDINA, India)  
Freshwater Action Network (FAN)  
Gender and Water Alliance (GWA)  
German Agency for Technical Cooperation (GTZ)  
German International Development Cooperation  
Global Environmental Flows Network (EFlowNet)  
Global Water Partnership (GWP)  
Global Water Partnership Central and Eastern Europe (GWP CEE)  
Global Water System Project (GWSP)  
Green Cross International (GCI)  
IEA Bioenergy Task 30  
IIED-America Latina  
Indian Institute of Youth Welfare (IIYW)  
Indian Water Works Association (IWWA)  
Institute for Integrated Economic & Social Development (BEST, Indonesia)  
Inter-American Development Bank (IADB)  
Inter-Islamic Network on Water Resources Development and Management (INWRDAM)  
Intergovernmental Panel on Climate Change (IPCC)  
International Association of Hydrogeologists (IAH)  
International Bank for Reconstruction and Development (IBRD)  
International Center for Water Hazard & Risk Management (ICHARM)  
International Centre for Integrated Mountain Development (ICIMOD)  
International Commission for the Hydrology of the Rhine Basin (CHR)  
International Development Research Centre (IDRC)  
International Foundation for Sciences (IFS)  
International Fund for Agricultural Development (IFAD)  
International Groundwater Resources Assessment Centre (IGRAC)  
International Institute for Environment and Development (IIED)  
International Lake Environment Committee (ILEC)  
International Water Association (IWA)  
International Water Management Institute (IWMI)  
IRC International Water and Sanitation Centre





Photo: Getty Images

ITT Corporation  
IWRM ERA-Net  
Japan Water Forum  
KfW Germany  
KPMG  
Ladakh Ecological Development Group (LEDeG, India)  
Lao Institute for Renewable Energy (LIRE)  
Lembaga Pengembangan Teknologi Pedesaan (LPTP, Indonesia)  
Maji na Ufanisi  
Ministry of Land, Infrastructure, Transport and Tourism of Japan (MLIT)  
Mony Consultants Ltd (Cambodia)  
Munich Re Foundation  
NEPAD Business Foundation (NBF)  
Netherlands Water Partnership (NWP)  
Network of Asian River Basin Organisations (NARBO)  
Nile Basin Initiative  
Nordic Environment Finance Corporation (NEFCO)  
Northern Water Network (NoWNET)  
Norwegian Ministry of Foreign Affairs  
Norwegian Ministry of Health and Care Services  
Orange County Sanitation District  
Orange County Water District  
Orangi Pilot Project Research and Training Institute (OPP-RTI)  
Organisation for Economic Co-operation and Development (OECD)  
Palestinian Hydrology Group (PHG)  
People's Dialogue Ghana (PDG)  
Rainwater Harvesting Implementation Network (RAIN)  
Regional Office for Europe of the World Health Organization (WHO-EURO)  
Romanian Ministry of Environment and Sustainable Development  
Royal Swedish Academy of Engineering Sciences  
Rural Literacy & Health Programme (RLHP, India)  
Saferworld  
SNOWMAN ERA-Net  
Society for the Promotion of Area Resource Centres (SPARC)  
South Asia Water Utilities Network (SAWUN)  
Southeast Asia Water Utilities Network (SEAWUN)  
Southern Nevada Water Authority  
SPLASH ERA-Net  
Stakeholder Forum for a Sustainable Future  
Stockholm Business Region  
Stockholm Environment Institute (SEI)  
Stockholm International Water Institute (SIWI)  
Stockholm Water Foundation (SWF)  
Streams of Knowledge (STREAMS)  
Suez Environment  
Sustainable Sanitation Alliance (SuSanA)  
Swedish Environmental Protection Agency (Swedish EPA)  
Swedish International Development Cooperation Agency (Sida)  
Swedish Network of Peace, Conflict and Development Research  
Swedish Red Cross  
Swedish University of Agricultural Sciences (SLU)  
Swedish Water House (SWH)  
Swiss Agency for Development and Cooperation (SDC)  
Swiss Federal Office for the Environment (SFOEN)

Swiss Federal Office of Public Health (FOPH)  
Swiss Re  
Technology for Economic Development (TED, Lesotho)  
The Centre for Environment and Development for the Arab Region and Europe (CEDARE)  
The Nature Conservancy (TNC)  
The World Conservation Union (IUCN)  
UN Framework Convention on Climate Change (UNFCCC)  
UN-Water  
UN-Water Decade Programme on Capacity Development (UNW-DPC)  
UN-Water World Water Assessment Programme (WWAP)  
UNDP Water Governance Facility  
UNDP Water Governance Programme  
UNEP Collaborating Centre on Water & Environment (UNEP-UCC)  
UNEP-DHI Centre  
UNEP Finance Initiative (UNEP FI)  
UNESCO Centre for Water Law, Policy and Science  
UNESCO Institute for Water Education (UNESCO-IHE)  
UNESCO International Hydrological Programme (UNESCO-IHP)  
Union of Agricultural Work Committees (UAWC)  
United Nations Children's Fund (UNICEF)  
United Nations Convention to Combat Desertification (UNCCD)  
United Nations Department of Economic and Social Affairs (UNDESA)  
United Nations Development Programme (UNDP)  
United Nations Economic Commission for Europe (UNECE)  
United Nations Educational, Scientific and Cultural Organization (UNESCO)  
United Nations Environment Programme (UNEP)  
United Nations Human Settlements Programme (UN-HABITAT)  
United Nations Secretary-General's Advisory Board on Water and Sanitation (UNSGAB)  
United Nations University – Institute for Environment and Human Security (UNU-EHS)  
United States Agency for International Development (USAID)  
University of Twente, The Netherlands (UT)  
USAID Global Water for Sustainability (GLOWS) Program  
Vietnam Institute for Water Resources Research (VIWRR)  
Water and Sanitation Association of Zambia (WASAZA)  
Water and Sanitation Program (WSP)  
Water Environment Federation (WEF)  
Water Integrity Network (WIN)  
Water Supply and Sanitation Collaborative Council (WSSCC)  
WaterAid  
WaterNet  
Wetlands International (WI)  
WHO/UNICEF Joint Monitoring Programme (JMP)  
Women in Europe for a Common Future (WECF)  
World Agroforestry Center (ICRAF)  
World Bank (WB)  
World Business Council for Sustainable Development (WBCSD)  
World Health Organization (WHO)  
World Meteorological Organization (WMO)  
World Toilet Organization (WTO)  
World Water Council (WWC)  
World Wide Fund for Nature (WWF)



# The 2008 Stockholm Water Prize

People do not only consume water when they drink it or take a shower. They wear it, eat it, drive it and fly it around the planet without reflection. 2008 Stockholm Water Prize Laureate Professor John Anthony Allan strikingly demonstrated this by introducing the “virtual water” concept, which measures how water is used in the production of food and consumer products.

Behind that morning cup of coffee are 140 litres of water used to grow, produce, package and ship the beans. That is roughly the same amount of water used by an average person daily in England for drinking and household needs. To produce one hamburger, 2,400 litres of water are needed.

Through simplified statistics and straight-forward reasoning, the virtual water footprint enables new approaches to managing water resources. Prof. Allan has applied this concept to show how trade can enhance national, regional and global water and food security. The premise is simple – send water intensive commodities from places where they are economically viable to produce to places where they are not. This has major impacts on global trade policy and research, especially in water-scarce regions, and has redefined discourse in water policy and management. In 2008, major corporations are beginning large-scale projects to analyse and reduce their virtual water footprints.

Prof. Allan has transformed thinking on the spectrum of water challenges. By shifting focus from water to political realities that govern its use, Prof. Allan’s insights connect the water problems to the remedies that are found outside the water sector. His work has shed light on how understanding the political landscape is paramount to solving the most serious water sector issues.

“Prof. Allan has improved understanding of key concepts in the communication of water issues and how they are linked to agriculture, climate change, economics and politics that are of the highest relevance for the successful and sustainable use of water resources,” said the Stockholm Water Prize Nominating Committee.

Described by many as one of the most influential thinkers in the global water sector today, Prof. Allan remains a leading voice for sustainable water development and an expert advisor on cross-cutting water challenges, such as balancing population growth and increasing food demand in developing countries, institutional reform, valuing water and conflict resolution.



Photo: Exray

Prof. John Anthony Allan, King’s College London and the School of Oriental and African Studies, received the 2008 Stockholm Water Prize on August 21 from the hands of H.R.H. Crown Princess Victoria of Sweden.

### About the Prize

The Stockholm Water Prize is an international prize founded in 1990 and presented annually by the Stockholm Water Foundation to an individual, organisation or institution for outstanding water-related activities. The activities can be within education and awareness-raising, human and international relations, research and water management. The Stockholm Water Prize Laureate receives USD 150,000 and a crystal sculpture. H.M. King Carl XVI Gustaf of Sweden is the Patron of the Stockholm Water Prize.

### Founders of the Stockholm Water Prize

The Founders of the Stockholm Water Prize are Swedish and international companies and organisations who strive to push sustainability forward in the water sector. The Founders of the Stockholm Water Prize working in cooperation with the City of Stockholm are: Bacardi, Borealis & Borouge, DuPont, Europeiska Insurance, Fujitsu Siemens Computers, General Motors, Grundfos Management, Hewlett Packard, ITT Water & Wastewater, Kaupthing Bank Sverige, Kemira Water, KPMG Sweden, Läckby Water, P&G, Ragn-Sells, Scandic, Scandinavian Airlines (SAS), Siemens AG, Snecma, SJ, Uponor and Water Environment Federation.

# The 2008 Stockholm Junior Water Prize



Ms. Joyce Chai from the United States received the Stockholm Junior Water Prize on August 19, 2008 from the hands of H.R.H. Crown Princess Victoria of Sweden.

With groundbreaking research on the potential human and environmental dangers of silver nanoparticles in consumer products, Ms. Joyce Chai of California, USA, stands at the forefront of modern science. Congratulating her was H.R.H. Crown Princess Victoria of Sweden, who presented the prestigious 2008 Stockholm Junior Water Prize in the presence of 700 guests at this year's ceremony.

For most teenagers, silver nanoparticles may sound like the latest ipod model. These microscopic bacteria destroyers are quickly becoming equally ubiquitous too. They are currently used to sanitise over 200 common consumer products. So effective are silver nanoparticles at killing bacteria – one gram can disinfect hundreds of square metres of substrate material – many industries, such as LG and Samsung, have naturally been interested in expanding their application. Everything from socks, soaps and baby bottles to toothpastes and refrigerators are becoming “silver lined.”

Chai's research uncovered several unsettling unknowns. When items possessing silver nanoparticles are laundered or discarded, the nanoparticles are released into the environment. While silver ions are highly toxic to aquatic plants and animals (only Mercury is more toxic), there is little knowledge on the potential toxicity of the nanoparticles. Chai performed research that takes steps

towards understanding the potential environmental risks of using silver nanoparticles. Her research repudiates the claim that silver nanoparticles are less environmentally hazardous than silver ions and questions the reliability of their use in consumer products.

In their official motivation the Stockholm Junior Water Prize Jury said, "The scientific impact of this investigation is extremely profound, and we expect that it will open the door to serious questioning and further studies regarding the widespread use of silver nanoparticles."

The projects "Restoration of Water Reservoirs Using Latent Phases of Aquatic Organisms," by Russia's Alexey Shinkarev and "Firewood Hearth Distillers for Safe Water for Vulnerable Rural Populations" by R. D. Dasun Thakshala Siriwardana, Sandun Gayath Sameera Dissanayaka, and A. Sujith Madushan Silva of Sri Lanka, won honourable mention.

## About the Prize

The Stockholm Junior Water Prize is presented annually to students between the ages 15-20 for outstanding water-related projects that focus on topics of environmental, scientific, social or technological importance. The international competition is sponsored by the ITT Corporation.

# The 2008 Stockholm Industry Water Award



Photo: Exray

Mr. Peter Forssman, Chairman, Stockholm Water Foundation (left), presented the 2008 Stockholm Industry Water Award to Mr. Larry R. Crandall, Vice Chair, Orange County Sanitation District, Mr. Denis Bilodeau, Director, Orange County Water District, and Mr. Doug Davert, Chair, Orange County Sanitation District at the award ceremony.

The planet faces pressing freshwater challenges – population growth, rising water demand, groundwater depletion, seawater intrusion and pollution – all must be addressed. But solutions are being crafted. The Orange County Water District and the Orange County Sanitation District, jointly developed the Groundwater Replenishment (GWR) System, which improves water supply, quality and the environment. Their impressive work to design and implement the GWR system earned them the 2008 Stockholm Industry Water Award.

The Groundwater Replenishment System is one of the world's most advanced water purification systems, which will produce reliable, high-quality water to replenish the groundwater basin, protect the basin from seawater intrusion, reduce the amount of treated wastewater released into the Pacific Ocean and provide enough water to meet the needs of an additional 500,000 people in the arid coastal region of Orange County California. The additional water source will also help Orange County Water District better manage the groundwater basin for both water quantity and quality. And it does so at half the fiscal and energy cost of importing water. The purification process has been replicated in Singapore, Australia and other arid coastal regions of the world and can be further spread to help address a looming global water crisis.

Water is purified through a three step process: microfiltration, which removes small suspended particles, protozoa, bacteria and some viruses from the water; reverse osmosis, where water is directed under high pressure through thin membranes to eliminate salts, viruses, pesticides, and most organic compounds; and ultraviolet (UV) light and hydrogen peroxide treatment, which

creates a powerful oxidation reaction that breaks down organic compounds through an accelerated decomposition process.

The result is ultra-pure quality water similar to distilled water. After the advanced water purification processes the water is returned to the groundwater basin where it is buffered with natural minerals. This water is injected along the coast to maintain a seawater intrusion barrier. The purified water blends with the existing groundwater before it is used as a source of drinking water for northern and central Orange County residents.

“Both agencies have demonstrated how communities can develop, implement and achieve sustainable water reuse,” says Dr. Lars Gunnarsson, Chairman of the Award Committee. “Their extensive involvement of private sector companies such as CDM and Trojan and Siemens, long-term commitment to research and development, and utilisation of cutting-edge technologies have established a model for water-stressed regions to replenish groundwater resources and improve water security.”

## About the Award

The Stockholm Industry Water Award is presented annually by the Stockholm Water Foundation in collaboration with Royal Swedish Academy of Engineering Sciences and the World Business Council for Sustainable Development. It honours innovative corporate development and implementation of water and wastewater process technologies, contributions to environmental improvement through improved performance in production processes, new products and other significant contributions by businesses and industries that help improve the world water situation.



# The 2008 Swedish Baltic Sea Water Award

Prof. Krzysztof Edward Skóra, Director of the Hel Marine Station at the University of Gdańsk received the 2008 Swedish Baltic Sea Water Award. Prof. Skóra's and the station's expansive research and educational activities to increase capacity and spread awareness on protecting the Baltic Sea earned him the prestigious distinction.

Prof. Skóra's personal research has exposed the impacts of new invasive species on the sensitive coastal water ecosystems in Poland. He also established the Hel Marine Station, which performs two critical functions to aid the Baltic environment. First, it facilitates and spreads research on the ecology of fish and marine mammals and the protection of rare species in the Baltic. Second, it educates and engages the public in continued commitment to preserve the fragile ecosystem through study visits, specialist courses and seminars. Its most popular division, the Grey Seal Research, Breeding and Rehabilitation Centre attracts 400,000 visitors annually.

"The Hel Marine Station, established under Prof. Skóra's

committed leadership, produces research of a high standard that is important for the understanding of the problems of the Baltic Sea and measures needed for its recovery. Equally crucial are the excellent educational programmes, which generate new waves of public interest, especially among the young, to preserve the Baltic Sea," said the Chair of the award committee, Ulla-Britta Fallenius of the Swedish Environmental Protection Agency.

## About the Award

Established in 1999, the Swedish Baltic Sea Water Award recognises direct and practical efforts to improve water quality in the Baltic Sea. The regional award is presented annually by Sweden's Ministry for Foreign Affairs during the World Water Week in Stockholm in appreciation of the dedicated work done by individuals, corporations, non-governmental organisations and municipalities to help protect and restore the Baltic Sea's water environment. In 2008, the prize sum was increased to SEK 150,000.

Prof. Krzysztof Edward Skóra  
at the Hel Marine Station.



Photo: Wojtek Jakubowski / Kosycaz Foto Press KFP



Photo: Mikael Ullén

H.E. Gunilla Carlsson, the Minister for International Development Cooperation in Sweden, presented the 2008 Swedish Baltic Sea Water Award to Prof. Krzysztof Edward Skóra, Director of the Hel Marine Station at the University of Gdansk.

## Best Poster

The 2008 Best Poster Award was given to Mr. Krailert Taweekul, Faculty of Agriculture, Khon Kaen University, Thailand, for his poster "Efficient Water Use Technology for Chemically Free Vegetable Production Managed by Farmer Group." Mr. Krailert Taweekul was awarded for "showing how local knowledge about organic farming can be synthesised into a naturally fertilised water system reducing the requirements of energy, water and labour."

Posters presented during the World Water Week have always been an important component of the overall programme. Special efforts are made to make them accessible to participants and incorporated into the deliberations taking place during the World Water Week.

Mr. Krailert Taweekul will receive travel and accommodation to participate in the 2009 World Water Week in Stockholm.

## WASH Media Awards

Four talented journalists from Africa and Brazil – including three working primarily in radio – received the 2007–2008 international WASH Media Awards for their excellence in reporting on water, sanitation and hygiene issues.

The journalists and their winning entries are: Ms. Winfred Onyimbo, Trans World Radio, Kenya, "Disease in bottle"; Ms. Cátia Toffoletto, CBN – Radio São Paulo, Brazil, "Water, the waste condemning São Paolo"; Ms. Claudine Efoa Atohoun, Office of Radio and Television, Benin, "Dassa, the commune of the 41 hills"; and Ms. Salome Gregory, Mwananchi Communications Limited, Tanzania, "This is Same, where fetching water means children miss classes." They won the WASH Media Award's English, Spanish, French and Gender categories, respectively.

True passion, commitment and journalistic excellence radi-

ated from the television, print, radio and web entries, said the chair of a nine-member international jury, noted television documentary-maker Robert Lamb of OnePlanet Pictures, UK. The competition featured high-quality journalism from Africa, Latin America, the Middle East, Central, South and Southeast Asia. "Public awareness built through the media paves the way for the global community to care and encourages decision-makers at all levels to act," said Mr. Lamb. "We should give due credit to these journalists who go after the all-important 'WASH story' as well as to their editors and producers and to the media organisations who give voice to people and issues that all too often are surrounded by silence."

The biannual competition is sponsored by the Water Supply and Sanitation Collaborative Council (WSSCC) and the Stockholm International Water Institute (SIWI).



Photo: Mikael Ullén

Mr. Anders Berntell, Executive Director, Stockholm International Water Institute and Mr. Jon Lane, Executive Director, Water Supply and Sanitation Collaborative Council together with Mr. Robert Lamb, OnePlanet Pictures, presented the 2008 WASH Media Award to Ms. Salome Gregory, Ms. Winfred Onyimbo, Ms. Cátia Toffoletto and Ms. Claudine Efoa Atohoun at the award ceremony.



## World Water Week Supporters



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## World Water Week in Stockholm

### **Building Capacity – Promoting Partnership – Reviewing Implementation**

The World Water Week in Stockholm is the leading annual global meeting place for capacity-building, partnership-building and follow-up on the implementation of international processes and programmes in water and development. It includes topical plenary sessions and panel debates, scientific workshops, independently organised seminars and side events, exhibitions and festive prize ceremonies honouring excellence in the water field. Stockholm is the meeting place for experts from businesses, governments, the water management and science sectors, inter-governmental organisations, non-governmental organisations, research and training institutions and United Nations agencies. The World Water Week is organised by the Stockholm International Water Institute.

[www.worldwaterweek.org](http://www.worldwaterweek.org) • [www.siwi.org](http://www.siwi.org)



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Annex:

# Summaries and Conclusions for Workshops, Seminars and Side Events

**WORLD**  
in Stockholm,  
August 17–23, 2008  
**WATER**  
**WEEK**

# Overview

The 2008 World Water Week in Stockholm involved more than 200 collaborating organisations and over 100 different plenary sessions, workshops, seminars, side events, panels, social events, field visits and prize award ceremonies. On these two pages, you can see which activities took place each day and the page where the summary can be found on. Workshops (in blue) are initiated by SIWI, the World Water Week host, and have programmes developed through an open abstract submittal process. Seminars (in yellow) and side events (orange) are initiated by different convenors and co-convenors, who develop their own programme content and format.

 Seminars	 Plenary Sessions	 Workshops	 Side Events
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## Sunday 17 August

### Full Day

YWP@WWW: Connecting Young Water Professionals	Seminar	4
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### Morning

SIWI Seminar: Water-Related Synergies and Trade-Offs – Food and Bioenergy	Seminar	4
Conflicts over Water and Water to Solve Conflicts	Seminar	5
Planning for Sustainable Sanitation in Cities	Seminar	5

### Lunch

How Can We Promote Sustainable Water Practices and Adoption of New and Innovative Systems?	Side Event	10
Approaches for Bridging the Sanitation Gap in Asian Cities	Side Event	10

### Afternoon

The Global Corruption Report 2008: A Call to Action	Seminar	6
Water for Growth and Development and Poverty Alleviation	Seminar	7
Water Supply and Sanitation: After Disaster and Conflict Situations in Fragile States	Seminar	8
The Impact of WASH Interventions on Children	Seminar	8
Transboundary Aquifers in Africa: Management and Protection of Under Cover Resources	Seminar	9
Improve Food Security – Combine Productive Sanitation, Conservation Agriculture and Water Harvesting	Seminar	9

### Evening

Findings from the Global Public Policy Network on Water Management (GPPN)	Side Event	10
Improving Local Water Governance and the Access of the Poor to Water: Experiences from Egypt, Jordan and Palestine	Side Event	11
DEWATS – Why Not Boost a Proven Solution to the Sanitation Gap?	Side Event	N/A
Responding to the Evidence? Aid and the Sanitation Blindspot	Side Event	11

## Monday 18 August

### Full Day

Opening Plenary Session and High Level Panel	Plenary	12
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### Lunch

Sanitation, Economics and Health: Launch of a Practical Manual	Side Event	N/A
Unlocking the Potential of the Domestic Private Sector in the Delivery of Water and Sanitation Services to the Poor	Side Event	N/A

Preliminary Conclusions of the Third UN World Water Development Report	Side Event	N/A
What Did You Learn in School Today?	Side Event	13

### Evening

The Sustainable Sanitation Alliance – Towards More Sustainable Sanitation Solutions	Side Event	13
At the Water's Edge – A Global Water Presentation	Side Event	13
Setting Water Management Research Agendas	Side Event	N/A
Safe Use of Wastewater in Agriculture for the Uninitiated: Launch of an Information Kit	Side Event	N/A

## Tuesday 19 August

### Full Day

Waste as a Resource	Workshop	14
Water Afteruse – Protecting Health and Ecosystems	Workshop	14
Preventive Action for Human Health	Workshop	15

### Morning

Asia Day: Getting Water Supply and Sanitation to All	Seminar	16
The Best of Sanitation: Synthesis and Outcomes of the Regional Sanitation Conferences	Seminar	17
The UN Watercourses Convention: Legacy, Prospects, and Value for the Realisation of International Policy Goals	Seminar	18
Regional Water Operators Partnership Initiatives: Constraints, Challenges and Way Forward	Seminar	18
Pricing and Financing for Affordable Water and Sanitation: How Can Different Stakeholders Contribute?	Seminar	19

### Lunch

Asia Day: How is Asia Adapting to Climate Change?	Side Event	22
On the Road to Istanbul: The 5 <sup>th</sup> World Water Forum in the Making	Side Event	N/A
Introduction to the Global Sanitation Fund	Side Event	N/A
The Challenge of Improved Global Freshwater Governance and the 1997 UN Watercourses Convention: High Level Panel Debate	Side Event	22

### Afternoon

Asia Day: Securing a Water Future for All	Seminar	16
The Joy of WASH in Schools	Seminar	20
Europe's Sanitation Problem: 20 Million Europeans Need Access to Safe and Affordable Sanitation	Seminar	20
5 <sup>th</sup> World Water Forum Topic Bazaar	Seminar	21
Making Regulation Work for the Poor: Accelerating Access to Urban Water Supply	Seminar	21
Environmental Flows and Human Well-being	Seminar	21



### Evening

Asia Day: Asia's Rapid Economic Growth and its Impact on Water Resources and Services	Side Event	23
Making Progress on Sanitation and Hygiene: Lessons from the Field and Breaking the Silence on Areas of Neglect	Side Event	23
Making a Difference: Enhancing Research by Scientists in Developing Countries on Water and Sanitation	Side Event	23

## Wednesday 20 August

### Full Day

Changing Human Behaviour – Prospects for Progress	Workshop	24
Cost-effectiveness in Pollution Abatement	Workshop	24
The Sustainable City	Workshop	25

### Morning

Water and Climate Day 1: Opening Session and Vulnerability in Hot Spots	Seminar	26
The UN-Water Seminar: Transboundary Waters – Sharing Benefits, Sharing Responsibilities	Seminar	27
Partnering with Business to Find Sanitation Solutions	Seminar	28
New Frontiers of Sanitation	Seminar	29
Virtual Water and Water Footprint: From Theory to Practice	Seminar	30
Water and Sanitation Advocacy: How Can We Convince You?	Seminar	29

### Lunch

Water and Climate Day 1: Upscaling of Local Water-Harvesting and Groundwater Recharge: Coping with Climate Change in Semi-Arid Regions	Side Event	33
Upscaling the Delivery of MDGs through the Sector Wide Approach Programme (SWAP)	Side Event	33
A Strategic Partnership for Water and Sanitation in Latin America and the Caribbean	Side Event	34
Becoming Bankable: Experiences and Challenges in Market-Based Finance in the Water Sector	Side Event	35

### Afternoon

Water and Sanitation under Changing Climatic Conditions	Workshop	26
Water and Climate Day 1: Climate Change, Water and Development – Adaptation in Africa	Seminar	27
Founders Business Seminar: The Business Case for Wastewater	Seminar	30
The Protocol on Water and Health: Where Health, Environment and Development Policies Meet	Seminar	21
The Right to Water and Sanitation: Approaches and Practical Implications	Seminar	31
Innovations in Groundwater Management for the Middle East and North Africa Region	Seminar	32

### Evening

Water and Climate Day 1: Response of IFIs to Major Challenges in the Water Sector: Launch of the EIB Water Sector Lending Policy	Side Event	34
Efficient and Sustainable Policy and Practice: Water Governance in Southern Africa through the Lens of the Dialogue Model	Side Event	34
Country-level Survey to Follow-up the Implementation of CSD-13 Decisions	Side Event	N/A

## Thursday 21 August

### Full Day

The Lingering Failure of Sanitation – Why?	Workshop	36
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### Morning

EU Water Initiative Partners Meeting: Multistakeholder Forum Part 1	Seminar	N/A
Water and Climate Day 2: Adaptation Strategies in Europe and High Level Panel Debate	Seminar	36
The Stockholm Water Prize Laureates Seminar: Global Sanitation – How Can Science Contribute?	Seminar	39
Ecosystem Services: An Economic Approach to Water Conservation	Seminar	39
Water Safety Plans: A Tool to Improve Health and Increase Prosperity	Seminar	39
Global Dialogue on the Creation of Sustainable and Reliable Water Supplies: A New Imperative	Seminar	N/A
Indicators for Action: Reporting on Water Management	Seminar	40
Healthy Water Resources Planning: Recent Trends in Health Impact Assessment of Water Resources Development	Seminar	40

### Lunch

Water and Climate Day 2: Developing Energy Efficient Measures and Climate Change Adaptation Measures for Water Utilities in Developing Countries and Towns	Side Event	45
Water and Economic, Social and Cultural Rights – Discussing Nordic Approaches	Side Event	45
Realising the Potential: Sanitation Interventions as Preventive Health Actions	Side Event	45
Delivering Big: Translating Knowledge into Action Through Internet Technology	Side Event	45

### Afternoon

Water and Climate Day 2: Adaptation in Practice	Seminar	37
EU Water Initiative Partners Meeting: Multistakeholder Forum Part 2	Seminar	N/A
Impending Disaster or Strategic Opportunity? Small Town Sanitation – It's a Big Issue	Seminar	41
Blue Revolution Initiative: Highlighting Worldwide Successes in Innovative Financing for Water and Sanitation	Seminar	41
Integrated River Basin Management (IRBM) – Towards the 5 <sup>th</sup> World Water Forum	Seminar	43
The Himalayan Water Towers – Resources Under Threat?	Seminar	42
Monitoring Drinking Water Supply and Sanitation: Moving Beyond 2015, Preparing the Next Generation of Indicators	Seminar	43

## Friday 22 August

### Lunch

Linking Water, Energy and Climate Change	Side Event	N/A
From Pilots to Policies: Working with Communities to Improve Urban Water and Sanitation	Side Event	47

# Seminars Sunday 17 August

## Water-Related Synergies and Trade-Offs – Food and Bioenergy

Convenors: Stockholm International Water Institute (SIWI), Stockholm Environment Institute (SEI), Chalmers University of Technology, Sweden and IEA Bioenergy Task 30

Against the background of an intense and often confusing debate regarding the growing demand for bioenergy and food, this seminar aimed to clarify tradeoffs and explore options for synergies related to land, water, ecosystems and socio-economic development objectives. In such a complex area, comprising socio-economic and biophysical systems, fragmentary understanding is understandable. Ambiguous explanations must be exposed for a realistic and acceptable navigation between conflicting interests. Systems analysis may be helpful in guiding towards robust and acceptable strategies.

Several types of tradeoffs were discussed: within the food sector (different diets); food versus bioenergy; production and income versus ecosystem health; upstream versus downstream. Most of these tradeoffs involve a temporal dimension. Although water productivity for bioenergy is not well known and varies significantly, current knowledge indicates that the consumptive water use to produce one liter of biofuel is about the same as is required to produce a daily diet for one person. Technical progress, including the second generation of bioenergy will significantly improve productivity, but it will take many years before promising technologies are realistic. The debate distinguished between no-go-areas and best-bet-areas. It was emphasised that there are areas that are suitable for bioenergy production but where food crops are too risky. Utilising 'waste land' could generate net benefits. This potential is, however, not clear.

Agricultural production, which includes biomass for energy generation should be of interest for the farmers who have been exposed to deteriorating terms of trade for most food crops for a number of years.

In areas where monocultures dominate, a shift towards the multipurpose use of land and water resources may contribute to increased income for the farmers as well as increased biodiversity. The combination of cattle rearing and ethanol production in parts of Brazil is an example of such an effort. In Sweden, byproducts from forest-based industries are expected to be important for energy production. Similarly, byproducts from farming in many countries in the South are used for biogas production, but also for other purposes, for example soil improvements. Since most food crops are seasonal, it makes sense to grow annual and perennial crops and vegetation that will make it possible to utilise land, water and sunshine throughout the year.

Due attention must be paid to the large variation that exists between different parts of the world, between various categories of farmers, who will win and who will lose, and so on. As always, the small farmer needs support. Bioenergy is a highly dynamic sector with considerable commercial interest, real and potential. With reference to the climate change debate, the discussion dealt with ways and means of tackling a situation that is 100% bad, i.e. the reliance on fossil fuels. Sustainability criteria are urgently needed as a basis for certification of agricultural products from a resource and an environmental point of view, but also to promote improved social conditions for people who are involved in the production of these products.

## YWP@WWW: Connecting Young Water Professionals

Convenors: Stockholm International Water Institute (SIWI) and International Water Association (IWA)

The human resources drought is very apparent in the water sector, given the relatively high attractiveness of other sectors, maturity of the workforce and high retirement rate. This workshop was held for young professionals and students to develop interest in the water sector, describe career paths and opportunities and link up with potential mentors from the current generation of water leaders. The workshop was attended by over 100 people, including the 2003 winner of the Stockholm Junior Water Prize, Claire Reid from South Africa. She described how the prize affected her life and opened up many opportunities: "I had always wanted to become an architect, but winning this prize inspired me to focus on sustainable architecture". Key note speakers remarked that to solve the supply and sanitation challenges of both today and tomorrow, new skill sets need to be brought to the water sector, including economics, social and managerial expertise. Brita Forssberg (a retired water professional from Sweden) stated that her background as an art graduate may be an unusual academic foundation, but that the emotion and passion involved in water immediately grabbed her and enabled her a distinguished career in the Stockholm utility. The Swedish Water House presented its initiatives and cluster groups in the national water sector, which is united in encouraging new blood to join the sector. Breakout sessions allowed young

professionals to interact on a one-to-one basis with leaders from each discipline within the water sector. This workshop was jointly organised between the International Water Association and SIWI and falls within the IWA Young Water Professionals Programme that is very active in attracting and keeping young professionals in the sector ([www.ywp.iwahq.com](http://www.ywp.iwahq.com)).

## Planning for Sustainable Sanitation in Cities

**Convenors:** Eawag Department of Water and Sanitation in Developing Countries (Eawag-Sandec), Swedish Water House (SWH), International Water Association (IWA) and Stockholm Environment Institute (SEI)

This Sunday morning seminar brought together over 90 interested participants willing to learn more about fresh thinking in sanitation planning. After a short introduction by Dr. D. Saywell (IWA) regarding key issues that need to be addressed for better sanitation planning, Dr. J.H. Kain from Sweden and Ms. B. Evans from England introduced innovations in planning frameworks: the Strategic Choice Approach and IWA's Sanitation 21 approach.

The main part of the seminar gave room to three state-of-the-art planning methods for improving sanitation in urban and per-urban areas. Mr. L. Salifu from Ghana presented the Strategic Sanitation Approach, building on the experience of UNDP/WSP in the 1990s and presenting some innovations and challenges when going to scale. Ms. N. Githaiga from Kenya presented an integrated planning approach entitled 'Household-Centred Environmental Sanitation' which aims to improve environmental sanitation (water, sanitation, drainage and solid waste) in unplanned urban environments. Dr. M. Kalshetti from India presented the successful Total Sanitation Campaign adopted by the State of Maharashtra since 2003 to achieve total sanitation coverage by 2012. Although this approach has a more rural focus, there are a lot of lessons to be learned about behaviour change and preventing risky behaviour through effective community mobilisation.

The ensuing discussion looked at some of the commonalities and potential of these demand-side planning methods highlighting multi-sector, multi-actor involvement, participatory planning tools, strategic outlook, etc. There was a consensus that these approaches are a promising step forward to overcome supply-led, subsidised infrastructure planning still common in most cities of the developing world.

## Conflicts over Water and Water to Solve Conflicts

**Convenors:** Saferworld and Gender and Water Alliance (GWA)

Conflicts over water increasingly take place on different levels worldwide. On the one hand, scarcity of water, particularly in areas where there are already societal conflicts, can lead to escalation of these conflicts. On the other hand, enabling access to water and sanitation can help solve conflicts, bringing diverse and often oppositional communities and individuals, women and men, together in water management institutions. Water governance needs to address key questions around gender, power and inclusion through multi-stakeholder dialogues and participatory learning processes: which women or which men participate in decision-making?

Cases from Uganda, Nigeria, Darfur (Sudan) and Gujarat (India) shared by GWA members and those working with Saferworld highlighted different approaches in dealing with water conflicts and larger questions of peace and justice. Shared water facilities can become unsafe places for women after communal violence in Gujarat, but can also be an instrument in mitigating conflict by bringing opposing communities together. In Darfur, displaced women going to collect water face the threat of rape, while in Uganda questions of access and control over resources, land and water, lie at the heart of most conflicts. Conflict Sensitive Approaches (CSA), drama, group discussions and revolving funds are methods used to negotiate conflicts about water and sanitation facilities.

The cases showed us that conflicts are deeply embedded in the social structure of everyday life and in gender and power relations. But conflicts can also provide us with windows of opportunity to address change, to break down our walls and fears and reach out to each other.

To overcome conflicts we need to:

- Facilitate multi-stakeholder dialogues and safe spaces for different actors – sometimes these need to be separate spaces (e.g. for women in patriarchal contexts)
- Ensure that all voices, of both men and women from different social groups, are articulated and heard, both in formal and informal contexts (e.g. around common water sources)
- Build capacity of development organisations to deal with conflict situations by understanding power and gender relations
- Be sensitive to all different aspects of conflict: governance, control over resources, land, access to credit and who decides on what things.



# The Global Corruption Report 2008: A Call to Action

Convenors: Water Integrity Network (WIN) and Stockholm International Water Institute (SIWI)

On the occasion of WWW, WIN organised various key sessions. These report refers to the objectives, outputs and next steps regarding some main sessions, namely the

- Dialogue meeting for building strategic partnerships for action (16 August);
- WIN seminar The Global Corruption Report 2008: A Call to Action (17 August).

The overarching objectives of these and other WIN sessions (members and donors meeting, press conference, booth presence) was to further raise awareness of WIN's mission, to explore interests and synergies of and with key international water actors, partners and WIN members. The elaboration around concrete actions at regional and local levels were given priority during the presentations and debates.

## Dialogue meeting for building strategic partnerships for action

About 15 representatives of leading international water actors met on 16 August 2008 for a 3 hour lively debate in central Stockholm. The interest and commitment itself were shown by the fact that the group gathered one day ahead of the official start of WWW. As expected some of the organisations were already committed to anti-corruption actions in the water sector while others used the meeting to further inform themselves and propose next steps. Overall participants broadly affirmed to the urgent need for concrete actions and for collaborating with WIN.

Much attention was given during the debate to the question of how principles of integrity, transparency and accountability can be best injected into national governments. While this remains challenging and difficult, broad consensus was brought to the table that the water, sanitation and irrigation infrastructure needs strong and transparent acting governments, water operators and institutions plus effective strategic management. In addition empowered civil society actors and NGOs are a must.

Although the relationships among water and power, finance and corruption are complex, many instances are known due to increasing research, projects and the establishment of anti-corruption fighting alliances and networks in the last years. Hence the underlying dynamics of corruption in water are more and more understood and tools and best practices are increasingly available.

## Objectives

- Sharing information on strategic frameworks and priorities;
- Identifying possible synergies between organisations, networks and strategic action;
- Developing value added strategic partnerships.

## Outputs

Impressively, many concrete actions were proposed by the participants during this dialogue meeting. They are clustered into some thematic action points below:

- Support to build capacity (main target groups: municipalities, NGOs, civil society and citizens)
- Reach out to Global Water Operators (GWOP)
- Co-opt, adopt and plug into existing networks outside own's one zone of comfort/ the water world
- Build regional groupings and involve different agents
- Equip government funds with an anti-corruption component
- Activate own members and partners to join WIN.

## Next steps

There was a need expressed to follow up – on a bi- or multi-lateral basis – on the proposals raised during the debate. This will be undertaken in the next weeks through WIN, ISC and partners.

## WIN seminar The Global Corruption Report 2008: A Call to Action

WIN, TI and SIWI convened an awareness-raising event which highlighted the importance of improving integrity and transparency in the governance structures in the sector. The two overarching themes of the seminar were the recommendations arising from this year's Global Corruption Report and the promotion of coalition-building and strategic partnerships. The seminar contained three blocks: presentations, a panel debate and thematic sessions and was attended by about 80 people.

Håkan Tropp opened the event, underlining the importance of good governance, integrity and transparency in the allotment of water, the provision of sanitation, the protection of biological diversity and management of natural resources. Christiaan Poortman delivered the key presentation on the recommendations arising from the Global Corruption Report 2008. He commandingly stressed the need for active partnership and cooperation amongst water and anti-corruption practitioners. This led towards an engaged panel debate where TV journalist Melinda Crane discussed with Margaret Catley-Carlson (UNSGAB),

Colin Chartes (IWMI), Donal O’Leary (TI), Joke Muylwijk (GWA), Ranjith Ratnayake (SLWP) and David Tickner (WWF) how coalitions can help to fight corruption and what can and must be done by whom and when, where are the obstacles, gaps and how does one overcome them. In addition an open discussion among panellists and audience ensued and provided an opportunity to address some points in more depth.

After the coffee-break Teun Bastemeijer recounted WIN’s mission, its activities and drive for local actions and coalition building. His presentation guided the audience into several working groups dealing with actions to fight corruption. The overall synthesis was delivered by Iftekhar Zaman. A session report will be formulated and disseminated via the WIN website and elsewhere.

Overall there was great enthusiasm and moral support expressed for WIN and its potential to improve integrity and structure of governance in the water sector by increasing transparency and fighting corruption.

## Objectives

The purpose of the seminar was:

- to further raise awareness for WIN and action oriented coalition building
- to establish an appropriate balance between advocacy work and concrete actions
- to stress that WIN fights corruption in the whole water sector (water resources management, irrigation as well as water supply and sanitation) and that WIN pursues active partnership in all sub-sectors
- to strengthen coalitions amongst participants from governments, utilities, regulators, the private sector, the donor community, civil society organisations, universities and research organisations

## Outputs

- Broad and engaged participation of major water actors, partners and WIN members
- Stimulation of interest in strategically collaborating with WIN
- Visualisation of WIN

## Next steps

- Keep the momentum of such WIN sessions and plan the next ones
- Disseminate a short, concrete synthesis of the WIN events at WWW to WIN members, partners and donors
- Follow up on what was said and on bilateral- and multilateral basis.

# Water for Growth and Development and Poverty Alleviation (WfGD)

**Convenors:** Department of Water Affairs and Forestry (DWAF) in collaboration with: European Union (EU), Council for Scientific and Industrial Research (CSIR), World Bank (WB), International Water Management Institute (IWMI) and NEPAD Business Foundation (NBF)

The main objective of this event was to create awareness on the role of water as an essential input for Water for Growth and Development (WfGD), which is increasingly receiving world-wide attention.

The South African government invited the European Commission, African Development, CSIR, and IWMI who, through their experience and knowledge with working on WfGD initiatives, could share their learning regarding the successes of the programme as well as the challenges that still lie ahead. Some of the key messages that came out of this seminar are:

Dr. Kwesiga from the African Development Bank suggested that weak governance arrangements and inadequate institutional capacity need to be addressed, especially in the context of water scarcity, climate change impacts, food security challenges and population growth, all of which are serious challenges faced by many African countries. Mr Pelpola from the South African Department of Water Affairs and Forestry (DWAF) built on this argument by explaining the critical role that clean and safe water plays, especially in overcoming the challenges noted by Dr Kwesiga. He indicated that we need to take a ‘business unusual’ approach in the implementation of resolutions at the 11th Conference of the AU Assembly, Heads of State. There is a need to take a programmatic approach to accelerate the delivery of MDGs, to ensure equitable, sustainable and integrated management and development of national and shared water courses in Africa, adapt measures to improve resilience to the threat of climate change, mobilise donor funding and other financing and effective engagement of civil society. He further highlighted the need for agricultural use for food security and placed the challenge on how we optimise each drop of water. Ms Eales, an independent consultant to the South African water sector, emphasised the need for balanced investments in institutional and infrastructural developments to support water security and WfGD, which in turn needs to be matched with innovative institutional arrangements, adaptive management and improved service delivery to counter threats to water security. Dr van Koppen, from the International Water Management Institute (IWMI), argued that it is essential to address the dichotomy between the formal and informal water economy and treat the regulatory needs of the two differently. Mr Pienaar

from DWAF noted the importance of managing water allocation between various water users, especially in the context of the growing water scarcity. Lastly, Dr Claassen from the Council for Scientific and Industrial Research (CSIR) highlighted the role of science and research in meeting the socio-economic challenges for WfGD.

Ms Pam Yako, Director-General of Department Water Affairs and Forestry eloquently summarised the key outcomes of the session.

## Water Supply and Sanitation: After Disaster and Conflict Situations in Fragile States

**Convenors:** Swedish International Development Cooperation Agency (Sida), Stockholm International Water Institute (SIWI), UNDP Water Governance Facility at SIWI (WGF), The United Nations Children's Fund (UNICEF) and Swedish Red Cross

The seminar delivered several messages based on lessons learned about water supply and sanitation services in relation to conflict, and especially debated in a post-conflict perspective. The speakers referred to various cases and were able to complement each other on issues raised which have proven to be of importance when working with unstable states following conflicts and/or disaster and in connection to recovery approaches in water supply and sanitation.

The first example was on recovery after economic collapse presented by Dr. Patrick Fox from his experience in Haiti and DPR of Korea, talking about sanitation intervention as an entry point to encourage stability in communities. The second presentation described how violent conflict and war creates severe damage between people and between different groups in society and government structures. Ms. Hesta Groenewald gave an example from Uganda presenting how post-conflict situations after such circumstances pose particular challenges in terms of effective service delivery. The third speaker Dr. Muhammad Khalid presented how a disaster can be made an opportunity for behaviour change. He spoke about his experience from Pakistan and described how the disaster itself can be an opportunity to break with norms and introduce new measures and improved hygiene behaviour especially in the societies where the pre-disaster/conflict hygiene and sanitation situation was poor and inadequate. The fourth presentation by Mr. Brendan Bromwich gave a wider perspective on water supply and sanitation services drawing in thinking on groundwater resources, climate change and drivers of conflict using the example of Sudan, and the situation in Darfur. His main message was that water programming needs to be context specific taking into consideration both the technical side as well as the social side. Dr. Mark Zeitoun concluded with his presentation on how effective humanitarian water supply and sanitation response also must incorporate politics into policy, drawing on the examples from the Middle East. He discussed the fact that although the humanitarian-aid industry's band-aids and reconstruction efforts are bigger and better than ever, curative solutions remain elusive. His main conclusion was that effective humanitarian water supply and sanitation policy must be based on the political nature of the conflict.

The presentations were well received by a diverse audience much like the diversity of topics that the speakers were able to cover within the short period of time. The seminar was funded by Sida and moderated by Cecilia Sharp, Head of the Water Division at Sida. Commentator was Prof. Paul Sherlock, Senior Advisor at UNICEF.

## The Impact of WASH Interventions on Children

**Convenor:** United Nations Children's Fund (UNICEF)

Water, sanitation and hygiene interventions are not just about MDG 7 Target c, they are also fundamental foundations to the achievement of many other MDGs especially those related to poverty, malnutrition, child survival, education and gender parity. Strengthening the evidence base for the impact of water supply, sanitation and hygiene (WASH) interventions on child survival is important to advocate for increased attention and budget allocations, at both national and international levels. The objective of this seminar was to present and review the evidence base for the impact of sanitation and hygiene on child health and survival.

Three of the presentations provided us with an opportunity to see just how water, sanitation and hygiene interventions can impact on a variety of health issues such as diarrhoea, pneumonia, malnutrition, intestinal worms, HIV/AIDs, etc. The latest research in this area was presented and water sanitation and hygiene interventions could be described as high impact interventions for child survival. A large volume of work on the evidence base is being undertaken globally and in this the International Year of Sanitation, raising awareness and focusing on the impacts is important as they really are some of the most cost-effective primary preventive measures for improving child health, growth and development.

However, children are not just targets or recipients of WASH programmes they can also play an active role in water, sanita-



tion and hygiene improvements and can be active agents of change in their schools, homes and communities. One of the key interventions which they can be actively involved in is handwashing. During this session, Global Handwashing Day (GHD) an initiative of the Public Private Partnership for Handwashing (PPPHW) was launched. Scheduled to take place on October 15th the aim is to raise awareness about the importance of handwashing with soap around the world. In this inaugural year everyone is encouraged to get involved and participate on the day as handwashing with soap is the most cost-effective interventions for child survival.

## Transboundary Aquifers in Africa: Management and Protection of Under Cover Resources

Convenors: African Ministers' Council on Water (AMCOW), Federal Institute for Geosciences and Natural Resources, Germany (BGR), International Association of Hydrogeologists (IAH), Stockholm International Water Institute (SIWI), United Nations Environment Programme (UNEP) and United Nations Educational, Scientific and Cultural Organization (UNESCO)  
In Cooperation With: UN-Water Decade Programme on Capacity Development (UNW-DPC)

There was a common agreement that groundwater plays a predominant role for the freshwater supply for different purposes. Humans cannot live without water, thus groundwater is the most precious resource in the world. Groundwater plays a key role in climate change adaptation and its buffer capacities have to be considered and enhanced when looking for adaptation mechanisms. It became obvious that sound and reliable scientific knowledge should constitute the basis for political decision-making, therefore the participants called for a strong and clear communication between scientists and decision makers in order to bring transboundary aquifer management to a high political level. Awareness raising and knowledge building for facilitating transboundary cooperation will provide a common strategic vision and action plan for implementation at the regional and local level. The participants agreed that transboundary groundwater cooperation could also enable commitments in strengthening partnership. Many participants highlighted the strategic importance of groundwater in Africa to meet domestic, agricultural and industrial water demands and this will intensify substantially over the next few decades. This implies the promotion of the institutionalisation of groundwater management by river basin organisations and national governments to facilitate transboundary aquifer management through appropriate regulatory and administrative arrangements at national level. Appropriate financial budgeting must be allocated by bilateral, multilateral and national donors in order to reinforce long term support to countries and regional organisations for using groundwater resources sustainably. Furthermore, finance must be allocated for groundwater resource exploration, evaluation and sound data collection to fill in data gaps leading to sound knowledge-based management practices. Developing partnerships between governments, as developers, managers and regulators, communities and other stakeholders, as water users, in the monitoring and management of groundwater is a prerequisite to use this precious resource sustainably.

## Improve Food Security – Combine Productive Sanitation, Conservation Agriculture and Water Harvesting

Convenors: Food and Agriculture Organization of the United Nations (FAO), German Agency for Technical Cooperation (GTZ), International Fund for Agricultural Development (IFAD), International Centre for Soil Fertility and Agricultural Development (IFDC), International Water Management Institute (IWMI), Stockholm Environment Institute (SEI), Swedish University of Agricultural Sciences (SLU), United Nations Convention to Combat Desertification (UNCCD) and Sustainable Sanitation Alliance (SuSanA)

All speakers presented arguments why combining productive sanitation with rainwater harvesting and conservation agriculture will give large synergies. This combination of good management practices has not been tried at large-scale yet, but many of us left the seminar with the intention of implementing this combination.

Honorary Jennipher Byakatonda, Minister of State for Water, Uganda, shared her experience from southwestern Uganda, where they know that the fertilising effect of urine is large. Yield increase is three times. Director Maimbu Malesu continued that the World Agroforestry Centre, ICRAF, is working on rain water harvesting, productive sanitation and conservation agriculture in different projects. ICRAF now wants to combine these features. Laurent Stravato informed that IFAD, in cooperation with CREPA and SEI, will investigate the impact of productive sanitation on the agricultural productivity and livelihood of poor households in Niger.

Executive Secretary Luc Gnacadja, UNCCD, pointed out that the geography of hunger and poverty coincides with that of

degraded lands and that degraded lands fixates less carbon. To improve livelihoods in Sub Saharan Africa we have to improve, not degrade, the land. Simultaneously this will counteract climate change. Professor Rattan Lal, State University of Ohio, continued by comparing soil to a bank account. If you take out more than you put in, the productivity goes down. The soil is degraded, and not even an elite variety crop will yield well. To improve the soil, you have to put more in than you take out.

Dr. Moussa Bonzi, CREPA, pointed at productive sanitation as a way of putting more into the soil. He shared with us the excellent yields which urine fertilised crops produced in their experiments. Often their yields were better than that of urea fertilised crops. The urine fertilised crops were also well accepted by the consumers, Dr. Bonzi responded to a direct question.

## Side Events Sunday 17 August

### How Can We Promote Sustainable Water Practices and Adoption of New and Innovative Systems?

Convenor: European Water Partnership (EWP), Northern Water Network (NoWNET)

In order to respond to the current global water challenges, raising awareness among decision makers in the agricultural, industrial and consumer sectors as well as promoting sustainable water practices and adoption of new and innovative system for solving water issues at a local and regional level is crucial. This side event highlighted regional initiatives which are focusing on multi stakeholder approaches securing good water management practices and aiming at advanced water stewardship. The representatives from EWP, NoWNET, Asia-Pacific Water Forum, Women for Water Partnership, Global Water Partnership, and Coca Cola European Union Group introduced and discussed initiatives, experience and lessons learnt from stakeholder partnerships, and advanced water stewardship on a local, regional and global level. The second half of the event provided the opportunity for a discussion between the panel and the audience.

### Approaches for Bridging the Sanitation Gap in Asian Cities

Convenor: United Nations Human Settlements Programme (UN-HABITAT) and Asian Development Bank (ADB)

UN-HABITAT in partnership with ADB and the Sustainable Sanitation Alliance (SuSanA) organised a side event on “Approaches for Bridging the Sanitation Gap in Asian Cities” on Sunday, 17th August 2008 during the World Water Week in Stockholm. The event focused on different approaches for achieving the MDG Sanitation Target by 2015 and universal and sustainable access to sanitation for all the residents of urban areas particularly the urban poor in the long run.

The session was chaired by Bert Diphooorn of UN-HABITAT. Andre Dzikus made a presentation on affordable and appropriate technologies for providing sustainable sanitation solutions to the urban poor. Amy Leung, Asian Development Bank; Sara Ahmed, GWA; Christoph Luethi, SuSanA and Jack Sim, WTO also addressed the participants.

The event raised awareness on the issues and challenges in meeting the sanitation targets. The session shared various experiences on local actions to provide sustainable sanitation solutions for adequate sanitation to the growing numbers of urban residents, especially the urban poor.

### Global Public Policy Network (GPPN) on Water Management: Up to and Beyond 2015 for the Water and Sanitation Agenda

Convenors: Stakeholder Forum for a Sustainable Future, Stockholm International Water Institute (SIWI) and Swedish Water House (SWH)

The Global Public Policy Network on Water Management, a joint initiative of Stakeholder Forum for a Sustainable Future and Stockholm International Water Institute, convened a side event entitled ‘Up to and Beyond 2015 for the Water and Sanitation Agenda’.

The objective of the event was to communicate the plans of the network for the coming year 2008-9 and beyond. The network was active in engaging stakeholders in preparation for the water and sanitation review at 16th session of the Commission on Sustainable Development. Hannah Stoddart presented on the issues the GPPN will address in preparation for the 17th session of the CSD, where the network will seek to ensure that water and sanitation issues are addressed and reflected in policy decisions. Karin Lexen of SIWI also spoke on the need to identify key priorities 'Up to and Beyond 2015'. Those present were encouraged to join discussions on how the GPPN can serve as a vehicle for engaging global stakeholders in identifying the priority areas for the water and sanitation in the coming years, and how this might shape any post-2015 MDG targets.

The event generated some fruitful discussions and widespread enthusiasm for the aims and objectives of the network. <http://gppn.stakeholderforum.org>

## Improving Local Water Governance and the Access of the Poor to Water: Experiences from Egypt, Jordan and Palestine

Convenor: EMPOWERS Thematic Group (ETG), IRC International Water and Sanitation Centre, CARE USA, CARE Middle East and Eastern Europe Regional Management Unit (MERMU), Inter-Islamic Network for Water Resources Development and Management (INWRDAM), The World Conservation Union (IUCN), Development Research and Technological Planning Center (DRTPC), Union of Agricultural Work Committees (UAWC), The Centre for Environment and Development for the Arab Region and Europe (CEDARE) and Palestinian Hydrology Group (PHG)

The side event launched the EMPOWERS guidelines for improved local water governance. The guidelines are based on work in Egypt, Jordan and Palestine that was carried out in the framework of an EU funded MEDA project. The side event started with showing a documentary film, "Nor Any Drop to Drink" to introduce the problems with water scarcity and water governance in the Middle East. Then the guidelines were presented as a possible way to tackle the problems with water governance. The focus was on practical tools for municipal planners and engineers such as the RIDA (Resources, Infrastructure, Development and Access) tool and scenario building. A story was told about the experiences of a municipal planner in a governorate in Jordan who had been working with the tools. The story is part of a book with some 20 personal accounts of working in the area of water governance in the Middle East. The discussion of the 60 participants in this side event concentrated on the sustainability of the EMPOWERS guidelines – what will happen with them after the end of the 4 year EMPOWERS project – and on the possibility to scale up the tools – from a single project village to entire districts and countries. At the end of the side event participants were given a set of EMPOWERS books (in English and Arabic), the guidelines and the story book included. All EMPOWERS outputs can be downloaded from [www.empowers.info](http://www.empowers.info).

## Responding to the Evidence? Aid and the Sanitation Blindspot

Convenor: WaterAid

At the global level, there is a mismatch between disease burden and development finance. This problem is most apparent in the response to the diarrhoeal disease burden, accounting for 1.6 million child deaths each year. Sanitation is a critical intervention but is failing to attract investment.

Case studies from Zambia and Madagascar highlighted the impact of vertical policy on the health agenda. Only 12% of people in Madagascar have access to safe sanitation. HIV/AIDS affects only 0.1% of the adult population but it still attracts five times the funding of sanitation.

The session investigated how governments and donors can address institutional blockages and silo policy thinking. The incentives are clear – addressing environmental health risks through low cost preventive interventions, such as sanitation promotion, would accelerate progress on child mortality and reduce the burden that diarrhoeal disease places on health systems.



# Opening Plenary Monday 18 August

The opening session of the World Water Week brought together leading voices from the water and sanitation sector. Anders Berntell, SIWI Executive Director, kicked things off with a powerful message on the key topic of the week, as he called on everyone to put priority on sanitation. Gunilla Carlsson, Minister for International Development Cooperation in Sweden, spoke on being "truly privileged" to have access to a toilet unlike many girls in Africa, who risk rape to relieve themselves. Prince William-Alexander of the Netherlands, Chair of UN Secretary General's Advisory Board on Water and Sanitation, flew in from Beijing (he also serves on the Olympic Committee) to inform participants that in the quest for universal sanitation coverage, "silver is no option, we are going for gold." The President of Madagascar, H.E. Marc Ravalomanana, shared his passion for better health and the goals that Madagascar has set for improved sanitation and water availability. In the Stockholm Water Prize Laureate Lecture, Professor John Anthony Allan, advised the water community that understanding the water environment will not be too effective without learning to navigate the political one. In the afternoon session, Dr. Kamal Kar showed how an Open Defecation Map created communication between community members to enable them to work to improve their sanitary conditions. Executive Vice President of Nestlé, Mr. José Lopez, Dr. Letitia A. Obeng, Chair, Global Water Partnership, WWF International Director General, Mr. James P. Leape noted how sound water management is essential for the private sector, increasingly challenging and can only be successful if it is done "on nature's terms."

## High Level Panel

At the High Level Panel, titled "For a Clean and Healthy World – The Role of Sanitation for the MDGs", H.E. Marc Ravalomanana, President of Madagascar, echoed this sentiment on the key role of leadership to not only stimulate investment in latrines but to also ensure that people want to use them. Leaders, especially at the local level, set the example and become role models for the rest of the community. "Only the chief of the village can initiate and lead the change of the people's behaviours and habits," he stated.

Fellow panellists, Hon. Mamphono Khaketla, Minister of Education and Training, Lesotho, Dr. Nicholas Alipui, Director of Programmes, United Nations Children's Fund (UNICEF), Mr. James P. Leape, Director General, WWF International, Dr. Maximilian Martin, Global Head, Philanthropy Services, UBS, Switzerland and Mr. Anders Nordström, Director General, Swedish International Development Cooperation Agency (Sida), agreed that improved communication in the sector is paramount. Sanitation and hygiene are the most cost-effective investments for poverty reduction and human health. This key message, they stressed must be better communicated using plain language, simple terms and clear illustrations to convince local and national governments to finance hygiene education and latrine provision.

## They Said It

**Anders Berntell** "Governments, donor agencies and financial institutions, local authorities and municipalities, headmasters in schools and husbands in families – everyone needs to start prioritising sanitation"

**Prince Willem-Alexander** "Did you know that Beijing has invested more than eight billion dollars in sewers and wastewater treatment? The air quality may leave something to be desired but the quality of Beijing's sanitation is impressive and sustainable."

**Prof. John Anthony Allan** "You don't want to play football with a baseball bat. You need the right tools to have IWRM."

**Dr. Kamel Kar** "If we defecate in the open, we are eating our own shit."

**Mr. James Leape** "Successful water management is management on nature's terms."

**Hon. Gunilla Carlsson** "All girls should have the same right as myself, to visit the ladies room."

# Side Events Monday 18 August

## What Did You Learn in School Today?

Convenors: International Water Association (IWA), Water Environment Federation (WEF), Stockholm International Water Institute (SIWI), UN-Water, Swedish International Development Cooperation Agency (Sida)

The UNESCO conference in Bonn 2009 is an opportunity to evaluate the UN Decade (2005-2014) of education for sustainable development, where water education ought to play an important part. Unfortunately, we find that in many countries, environmental education does not go beyond the jingles and the campaigns, and water is absent from school curricula. Water professionals see an important role for Ministers of Education to lead change. We need to link the academic with the practical, turn expert knowledge into common practice. For example, sustainability is about concrete actions: wash hands, save water and energy, don't boil the entire kettle if you only need a cup of tea. Methods and materials need to be appropriate and affordable. A stick under a tree is still very effective and for that we don't need an expert, we need a teacher. But old systems and schools are slow to adapt, and we need to understand the incentives that encourage change.

## The Sustainable Sanitation Alliance – Towards More Sustainable Sanitation Solutions

Convenors: Sustainable Sanitation Alliance (SuSanA)

Co-convenors: Swiss Federal Institute for Aquatic Science and Technology (Eawag/Sandec), German Agency for Technical Cooperation (GTZ), Indian Water Works Association (IWWA), International Water Management Institute (IWMI), Japan Water Forum (JWF), Stockholm Environment Institute (SEI) and United Nations Human Settlement Programme (UN-HABITAT)

The convenor for this side event was the Sustainable Sanitation Alliance (SuSanA), and the aim of this 1.5 hour event was to entice interested parties to become active in this network (currently nearly 100 partner organisations). Elisabeth von Münch, from the German Agency for Technical Cooperation (GTZ), gave an introduction to the SuSanA, and highlighted the importance of the upgraded website ([www.susana.org](http://www.susana.org)) which is set up so that registered members can upload files, and therefore easily share knowledge with others in the network. Madeleine Fogde (SEI) presented some products of the working group "capacity development for sustainable sanitation" (e.g. a DVD with capacity development material). One of these products is the Google Earth based map of sanitation projects worldwide, which was presented by Noriko Yamaguchi (Japan Water Forum). With this interactive tool, registered users can add information about their own sustainable sanitation projects ([www.sanimap.net](http://www.sanimap.net)). Results from the working groups on "food security and productive sanitation systems" and "sustainable sanitation for cities" were presented by Robert Gensch (CIM Philippines) and Christoph Lüthi (EAWAG/SANDEC). After the presentations there were many questions from the audience of about 50 people which were answered mostly by Roland Schertenleib (EAWAG/SANDEC). For example the question arose how quality control would be managed for the material which is uploaded to the website.

## At the Water's Edge – A Global Water Presentation

Convenor: World Wide Fund for Nature (WWF)

WWF launched 'At the Water's Edge', a major new presentation on the global water crisis. The presentation tells the story of water in a compelling way, setting out how central it is to all our lives and our cultures. The presentation explored how management of water will be central to many of the key challenges that we have in the twenty-first century, both for people and nature.

The presentation was introduced in Stockholm by WWF-International Director General Jim Leape, and delivered by Tom Le Quesne from WWF-UK. The presentation will be given by WWF staff to senior business and political leaders.

# Workshops Tuesday 19 August

## Workshop 1: Waste as a Resource

Convenor: Stockholm International Water Institute (SIWI)

Co-Convenors: Global Water Partnership (GWP) and International Water Management Institute (IWMI)

Today in the developed and developing world contrasting approaches are being adopted to wastewater management. Globally, only a small volume of wastewater is treated. Use of wastewater in farming is already happening and will only increase with increasing water scarcity and urbanisation. Many of the 200 million urban farmers who specialise in market gardening rely solely on untreated or partially treated wastewater.

Wastewater and biosolids are therefore important resources that can assist in fighting the water, food and energy crises. The use of wastewater, excreta and greywater in agriculture offers opportunities for water and nutrient recycling and can have a positive impact on the environment by preventing pollution.

Management of water after use is just as important as before use. The challenge is to ensure that health and environmental risks are anticipated and overcome. While there are many options to address pathogen contamination at farm and post harvest levels, source control remains essential for industrial wastewater inflow.

A multiple barrier approach (treatment and non-treatment options) will ensure that risks are anticipated and overcome. A modest change in behaviour could significantly reduce the risk from the reuse of wastes. Awareness campaigns from farm to fork are needed. Dry toilet compost and separated urine are valuable sources of fertilisers. There is a significant potential of biogas production from solid waste and sludge in rural communities.

There seems to be an institutional gap in the way wastewater is being handled. In addition, the approach to wastewater management is still very centralised and the shift to decentralised wastewater management is still seldom realised. Wastewater should be treated, reused or disposed of at or near its point of use. An integrated framework of water supply, pollution control, wastewater management, solid waste collection, treatment and reuse is needed.

## Workshop 2: Water Afteruse – Protecting Health and Ecosystems

Convenor: Stockholm International Water Institute (SIWI)

Co-Convenors: World Business Council for Sustainable Development (WBCSD) together with AquaFed, Water Environment Federation (WEF) and United Nations Environment Programme (UNEP)

Examining water afteruse from a “downstream” perspective and looking at the water cycle in reverse, generated many useful insights. For almost every user, water has already been used. Every user has a responsibility to release used water in a way that allows downstream uses and secures healthy ecosystems. This requires geographic knowledge and information sharing, pollution control and decision-making mechanisms. Users need to know how the water has been used by others and how others will use it after them. Especially in streamflow-depleted rivers and other water shortage situations, wastewater is important as a useful water resource. In rich and poor countries, integrated management of used water and the “good” as well as the “bad” it contains is essential but difficult. The informational and educational aspects of used water management present special challenges. Many stakeholders need to be involved. Scientists and managers need to generate spatial information that people can identify and understand. Service deliverers and system operators need to listen and to explain. Planners face challenges and uncertainties and need better tools for monitoring, hazard identification and locating pollution sources. Politicians must engage in long-term decision-making and widen their international debate beyond “freshwater and toilets” to incorporate agricultural contamination. In this complex picture behavioural change is required. The role of education, constructive use of self-interest and the power of demonstration are good ways to lead everybody to understand the value they can gain and responsibilities they carry for water afteruse.

The following five questions were debated in depth:

- What are the mechanisms for solving conflicting interest between upstream and downstream users?
- How to structure the obligations of upstream users to protect those of downstream users and healthy ecosystems?



- What are the tools and mechanisms for educating and engaging the general public and allowing the population to perceive its interdependence and responsibilities?
- Which stakeholders should play a key role in the resolution process?
- How can one value wastewater and the role that it plays in development and poverty alleviation.

#### Key messages

- Every user has a responsibility to release used water in a way that permits downstream uses and respects ecosystems. This requires geographic knowledge and information sharing, pollution control and decision-making mechanisms.
- To reduce friction and potential conflicts, upstream and downstream users need information about each others activities and forums for dialogue. It is the responsibility of governments to organise this.
- Used water frequently contains many beneficial components for afterusers and should not be considered as a mere waste. It should be valued for its nutrients, energy, new water resource potential, etc...

## Workshop 4: Preventive Action for Human Health

Convenor: Stockholm International Water Institute (SIWI)

Co-Convenors: World Health Organization (WHO) and Stockholm Environment Institute (SEI)/Sustainable Sanitation Alliance (SuSanA)

*How can we demonstrate the long-term impact of household water handling and the WASH campaigns?*

Long-term health benefits of household water treatment, safe storage and WASH campaigns are the outcome of a complex causal chain with many confounding factors along the way. Efforts should focus on further disaggregating datasets. Any related research and monitoring activity must have an economic evaluation component and should take on board income and livelihood issues. The development of post-2015 WSS/Health indicators must start now; they should support a more detailed perspective and include new, proven approaches such as Household Water Treatment. Behavioural change needs to be supported by perceivable evidence, but will only be sustainable once the innovation becomes the accepted social standard.

*Can positive health impact be demonstrated as resulting from water and sanitation interventions for the general populations and for vulnerable groups?*

Sanitation is known to have important health benefits but questions remain as to what sanitation option(s) is/are optimal in which context. In any single context, choices have to be made, with efficacy as the first criterion, followed by an overlay of other social and economic considerations. Long-term follow-up looking at sustainability and resilience is frequently missing. Even where interventions work well, we often do not know why they work well, yet it is this knowledge that is the basis for replicability. More research is needed on the water, sanitation and hygiene health determinants for certain vulnerable groups, such as HIV/AIDS patients and their caretakers, their risks and their needs.

*Are health aspects well integrated in policy documents for the reuse of wastewater and stormwater?*

Policy formulation is only useful if the resources and political will are there to implement the policies. Rather than a rigid framework, policies should be conceived as a process that can adapt to new needs and new evidence. In order to influence policies in other sectors effectively, policy research should take on board the perspectives of those other sectors and results presented should be credible to them. Examples exist where health issues have been integrated in the policies of water resources development and management, but these remain exceptions rather than rule. Efforts addressing the need to strengthen the health component in such policies need to be stepped up.

# Seminars Tuesday 19 August

## Asia Day: Getting Water Supply and Sanitation to All

Convenor: Asian Development Bank (ADB)

Co-Convenors: Asia-Pacific Water Forum (APWF), Global Water Partnership (GWP), International Water Association (IWA), International Water Management Institute (IWMI), Japan Water Forum (JWF), Network of Asian River Basin Organizations (NARBO), South Asia Water Utilities Network (SAWUN), Southeast Asia Water Utilities Network (SEAWUN), Central Asia and South Caucasus Water Utilities Association (CASCWUA), Streams of Knowledge (STREAMS), UN-HABITAT, Water and Sanitation Program (WSP), World Toilet Organization (WTO)

The session focused on two themes: Accelerating Sanitation Investments and Expanding Water Supply Coverage. The sanitation segment included a screening of ADB's new documentary entitled "Coming Clean on Sanitation," which showcases sanitation solutions in Indonesia and Pakistan, and two (2) presentations: the Water and Sanitation Programme's urban sanitation planning and development initiative and the results of an ADB co-funded study on the economic impacts of sanitation.

The study concluded that sanitation-related economic losses in Cambodia, Indonesia, Philippines and Viet Nam amount to US\$ 9 billion per annum or about US\$ 30 per capita. Given this reality, participants highlighted the importance of disseminating this information to encourage policy makers to act. Among the suggestions offered to accelerate sanitation investments are: employ an integrated approach for urban infrastructure development, push sanitation's demand and supply chains by creating emotional incentives for government and individuals and supporting champions, and for ADB to be more proactive in conducting dialogues with developing member countries on the need to invest in sanitation.

The water supply segment included the screening of another new ADB documentary, "Changing Lives: Rural Water Schemes in Sri Lanka," which documents the implementation and benefits of several water supply and sanitation projects in rural Sri Lanka, and three (3) country presentations. These presentations focused on India's successful, government-led initiative to improve urban infrastructures, including water and sanitation, the efforts of Viet Nam's Haiphong Water Supply Company to improve its performance by increasing its operational efficiency and financial viability, and the Sri Lankan water board's new management approach to improve service delivery.

The water supply session underscores the efforts of governments and water operators to improve service delivery. In the case of India, the implementation of the Jawaharlal Nehru National Urban Renewal Mission demonstrates the commitment of the Government to reforms providing over US\$ 11 billion to the programme covering 63 cities, 40% of which is allocated for water supply and sanitation. The National Water Supply and Drainage Board of Sri Lanka likewise instituted a programme putting customers at the center of its operations re-orienting staff to address customer concerns first. The programmes are showing positive results especially in a region where 24/7 water supply is absent. Pockets of success can be seen in pilot areas in India and Sri Lanka where 24/7 has been achieved and non-revenue water (NRW) is being reduced. On the other hand, many are eager to learn from the experience of Haiphong Water Supply Company which, over a span of just 10 years, have managed to improve service delivery by reducing NRW to 21% from 70%, covering close to 100% of population with 24/7 good quality water. Beyond the reforms within the utility itself, the policy reforms particularly on tariff regimes, greatly contributed to the success of Haiphong. Their experience proves that imposing appropriate tariffs that will cover maintenance and expansion programmes, along with operational improvements, result in financial viability. Today, Haiphong has been tapped by ADB as an expert utility under its Water Operators Partnerships (WOPs) programme. The discussion covered the factors contributing to the success of these initiatives and the continuing challenges faced by these water institutions, among them affordability of tariffs and financial viability. The twinning programme between weak and strong utilities supported by ADB through the WOPs Programme caught the interest of several utilities, who expressed their interest to participate in the programme.

## Asia Day: Securing a Water Future for All

Convenor: Asian Development Bank (ADB)

Co-Convenors: Asia-Pacific Water Forum (APWF), Global Water Partnership (GWP), International Water Association (IWA), International Water Management Institute (IWMI), Japan Water Forum (JWF), Network of Asian River Basin Organizations (NARBO), South Asia Water Utilities Network (SAWUN), Southeast Asia Water Utilities Network (SEAWUN), Central Asia and South Caucasus Water Utilities Association (CASCWUA), Streams of Knowledge

The afternoon session covered two themes: Ensuring Sufficient Water for Food and Promoting Effective Basin Water Management.

Discussion on the water for food segment revolved around a recent study by the International Water Management Institute on the Comprehensive Assessment of Water Management in Agriculture (2007), which showed that Asia will not have enough water to produce food for a growing population over the next 50 years unless certain interventions are made. Increasing population and changes in diet will drive water demands higher. Changes in the policy agenda for water management—ones that ensure food security and protection of the ecosystem—will be needed. Recommended solutions vary from infrastructure needs in Africa to maximising the use of infrastructure in Asia by focusing on productivity, reallocating supplies and rehabilitating ecosystems.

Panel members from Indonesia's BAPPENAS and ADB covered various issues, including the value of water in agriculture and other uses, the challenges of securing payment for irrigation services, and approaches to increasing water productivity in agriculture necessary to feed Asia's expanding population. Concluding that the situation is not all bad, the group highlighted the need to improve communication with political leaders and decision makers, continue investments in research and extension to increase water productivity, and make better and safer use of the increased wastewater resources in agriculture.

The basin water segment showcased three (3) cases featuring different aspects of river management. The first case focused on Indonesia's Citarum basin, where integrated water resources management (IWRM) is currently being introduced with the support of ADB's Multitranchise Financing Facility. The second case was on the Chu Talas basin where ADB has supported strengthening the operation of a transboundary commission to operate the basin for the benefit of the riparian nations, Kyrgyz Republic and Kazakhstan. The final case was on the challenges of sustaining an IWRM approach in the Mekong basin, where accelerated, largely private sector development, including hydropower and plantation agriculture or forestry, is currently taking place.

A panellist from Vietnam's National Mekong Committee noted the pressure felt by many basins to accelerate development of water resources for hydropower and food production concluding that good decisions can only be made when an integrated assessment of the threats and opportunities of such developments are made in the context of the entire basin. Plans for the Citarum basin illustrate the challenge of achieving such coordinated planning involving multiple agencies to work together; such difficulties are magnified when river basin planning includes international dimensions particularly when the river transcends countries' territorial boundaries. Discussions on mechanisms for resolution of disputes between sectors and nations sharing a basin's resources, and the concepts of benefit-sharing between upstream and downstream populations were made and drawing from experience of the Mekong River Basin.

## The Best of Sanitation: Synthesis and Outcomes of the Regional Sanitation Conferences

**Convenors:** UN-Water Taskforce on Sanitation (United Nations Children's Fund, UNICEF, World Health Organization, WHO, Water and Sanitation Program, WSP, Water Supply and Sanitation Collaborative Council, WSSCC) and United Nations Secretary-General's Advisory Board on Water and Sanitation, UNSGAB

A highlight in the run up to, and during 2008, the International Year of Sanitation (IYS), was a prominent series of well-attended meetings held in regions seeking to improve sanitation access to meet the Millennium Development Goals. These included:

- Sacosan (2006) (and planned for November 2008) – South Asia
- LatinoSan (November 2007) – Latin America
- EaSan (December 2007) – East Asia
- AfricaSan (February 2008) – Africa

The meetings were hosted by Governments in the regions and/or regional political bodies and supported by many international agencies. The meetings uniquely brought together ministers in charge of sanitation, sanitation experts from the public and private sectors, civil society, external support agencies and research institutions, as well as leading representatives from health, education, finance and local government. They generated a dialogue on how to achieve large-scale sanitation and hygiene programmes, and on how to raise the political profile of sanitation.

The "Best in Sanitation" seminar in Stockholm WWW 2008 presented a synthesis of the main outcomes from the regional sanitation meetings and hosted a discussion on the follow-up to the regional meetings. The main conclusions to the Stockholm seminar were:

1. The regional SAN meetings have become a remarkably successful vehicle for enabling sanitation stakeholders to learn from



experience on the ground and to build momentum in a much neglected sector. The mix of political and technical streams is recommended to continue. The meeting outcomes varied, ranging from creating awareness and exchange of best practices, to signed political declarations committing countries to measurable outcomes. Many countries have followed up with specific country actions, though a mechanism has not been fully put in place to monitor and record these outcomes. Regions are encouraged to put this capacity in place for future meetings to focus on binding commitments with measurable outcomes.

2. Key country actions needed to build large-scale sanitation and hygiene programmes are: (1) Develop a specific national sanitation and hygiene strategy; (2) Create a clear and accountable national leadership for sanitation and hygiene; (3) Ministers of Finance to establish and provide increased resources to a specific budget lines for sanitation and hygiene; (4) Place emphasis on demand-led sanitation policies, supporting mass behaviour change programmes, whilst encouraging supply side-institutions to respond to the increased service demand; and (5) Clarify and strengthen information systems.
3. Significant advances in achieving large-scale sanitation and hygiene programmes were noted through the following approaches: (1) Better understanding the economic impact of neglecting sanitation; (2) Developing national sanitation-specific strategies; (3) Community-led Total Sanitation Approaches; (4) Condominial sewerage approaches as a significant part of the solution of service provision to the urban poor; and (5) Public-private handwashing partnerships.

## The UN Watercourses Convention: Legacy, Prospects and Value for the Realisation of International Policy Goals

**Convenors:** Green Cross International, Stockholm International Water Institute (SIWI), Swedish Network of Peace, Conflict and Development Research, United Nations Secretary-General's Advisory Board on Water and Sanitation (UNSGAB), UNESCO Centre for Water Law, Policy and Science and World Wide Fund for Nature (WWF)

The Seminar offered attendees a unique opportunity to learn about the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses and to assess its role in enhancing the management of transboundary river basins. After intense discussions, the overall conclusion from presenters and the audience was for the urgent need for states to ratify and widely implement the Convention.

Ably chaired by SIWI, the seminar started with WWF International's Director General recalling the focus on transboundary waters of next year's World Water Day—a possible landmark for the Convention's entry into force. He invited those countries that voted in favor, were co-sponsors, or have called for ratifications through other international processes, to lead by example and join the Convention. HRH the Prince of Orange underscored that UNSGAB's Hashimoto Action Plan expressly calls on governments to ratify and implement the Convention, as a key action for achieving the MDGs. He called upon participants to work with their own governments for achieving this.

During the technical sessions, speakers touched upon some concerns and questions regarding the value of bringing the Convention into force. They also drew attention to the 2008 Decision of the Convention on Biodiversity calling on nations to ratify and implement the UN Watercourses Convention. Moreover, presentations covered the role of the Convention to compliment existing water agreements and fill regulatory gaps in Africa and Central America. The relevance of the Convention for fostering cooperation and preventing conflict in a changing climate was also assessed. Another panellist addressed the possible reasons slowing down its ratification process. Building the case for entry into force, a legal expert highlighted that a widely ratified UN Watercourses Convention would provide certainty to the process of determining “who” should get “what” water, “how,” and “why.” Another speaker addressed the flipside of non-entry into force, discussing whether that could affect the ability of the Convention to contribute effectively to improving the management of international watercourses. The importance of bringing the UN Watercourses Convention into force was reemphasised among other policy recommendation during the wrap-up session of the World Water Week.

## Regional Water Operators Partnership Initiatives: Constraints, Challenges and Way Forward

**Convenors:** United Nations Human Settlements Programme (UN-HABITAT) and United Nations Secretary General's Advisory Board on Water (UNSGAB)

The Seminar on “Regional Water Operators Partnership Initiatives: Constraints, Challenges and Way Forward” was co-convened by UN-HABITAT and the United Nations Secretary General's Advisory Board on Water and Sanitation (UNSGAB) on 19 August. It was co-chaired by Bert Diphooorn of UN-HABITAT and Antonio Miranda of UNSGAB.

Representatives of four regional WOPs mechanisms (Asia, Latin America, Arab States, and Africa) made presentations on their activities to build partnerships based on the WOPs principles for the provision of water and sanitation services in their regions. This was followed by a participatory panel discussion moderated by Faraj El-Awar, Programme Manager, Global WOPs Alliance, UN-HABITAT. Panellists and the other participants highlighted the following issues necessary for successful WOPs:

- Self-sustained networks based on common interests of the cooperating utilities.
- Willingness to share information
- Financial sustainability of utility networks
- Knowledge transfer across regions
- Utility commitment to implement changes
- Identification of, and working with, few champions
- Training and capacity building support to regional WOPs initiatives by the Global WOPs Alliance.
- Sanitation is a critical issue to utilities – impact on pollution.
- Increased involvement of citizens/civil society organisations, local authorities in the WOPs process.
- Integrity in the management of utilities
- Public versus private partnerships – the main focus of WOPs is public – public partnerships, especially that globally more than 90% of water operators are public. However, private operators can participate in the regional and global WOPs processes as long as developed partnerships are non-profit in nature.

General outcomes of the event are the following:

1. Awareness raised on the Global WOPs Alliance as an umbrella and a platform for inter-regional exchange for regional WOP processes
2. Experiences shared on regional WOPs processes, the challenges they are facing, and the way forward ahead of them
3. Information disseminated on current activities and future plans of bilateral and multilateral partners which are active in supporting regional WOPs processes
4. Issues raised such as the need for guidelines to guarantee adherence to WOPs principles (non-profit basis), and the inclusion of transparency in the water sector in the Global WOPs activities

## Pricing and Financing for Affordable Water and Sanitation: How Can Different Stakeholders Contribute?

**Convenors: Organisation for Economic Cooperation and Development (OECD), European Investment Bank (EIB) and Agence Française de Développement (Afd)**

The ongoing OECD Water Programme was presented, as well as findings of OECD's work on tariffs highlighting their importance for financial sustainability and the difficulties in their use due to tradeoffs between policy objectives. Panellists were asked to address (i) ways to break the vicious circle of underfunding, insufficient investment, deteriorating infrastructure and services and low users' willingness to pay (WTP), (ii) a real/perceived trade-off: financial sustainability vs. affordability, and (iii) whether the debate on tariffs should extend to improving service quality at reasonable costs and increasing collection rates.

The first discussion called for (i) new definitions of affordability based on local WTP assessments (the poor generally pay more than accepted thresholds), to reduce the influence of "political affordability" considerations, (iii) the role of regulators and providers in controlling costs, through service levels appropriate to local WTP and efficient service provision – good data is needed, (iv) recognition that tariffs can cover O&M costs everywhere, and often some investment costs too: utilities cannot meet social policy objectives without compensation, (v) evidence of how tariff structures / other instruments protect vulnerable groups: agreement was that it is preferable to subsidise access over consumption, and (vi) an informed, non-biased policy dialogue.

The second discussion focused on how diverse public and private actors may contribute to closing the financing gap left by tariffs, calling for (i) realistic investment strategies to optimise investments and increase the effectiveness of fund use, (ii) the need to look beyond ODA, as flows to water and sanitation have not increased and will not meet increasing needs, (iii) improvements in the leveraging capacity of grants, the coordination and effectiveness of the engagement of all stakeholders, from IFIs to local private partners: key aspects are understanding what drives each actor, a strong government leadership for donor coordination and transparent regulation.

## The Joy of WASH in Schools

Convenors: United Nations Children's Fund (UNICEF) and IRC International Water and Sanitation Centre

Learning can be tough for a child facing the daily reality of dirty drinking water and broken or dirty toilets. Across the world, a lack of access to safe water and sanitation has a serious impact on children, the situation is particularly critical for girls, who make up most of the children currently out of school. Many are denied their rightful place in the classroom by lack of access to separate and decent toilets at school. Even where such facilities are provided, their maintenance and management needs to be addressed in order to ensure continued services and behavioural improvements which promote enhanced school enrolment especially for girls and improved health among all children.

Over the years many organisations and governments have supported innovative WASH in school initiatives at all levels. An impact and sustainability study which was undertaken in Kenya and Kerala (India) was presented during this session, these studies looked at the impact of WASH in schools interventions and found there is a need to ensure a complete intervention package is implemented at all schools as the provision of facilities alone is not enough. The studies also found that when compared to non-intervention schools, children in project districts had more consistent hygiene practices (specifically handwashing), more accurate hygiene knowledge, and expressed greater satisfaction with the facilities and there was some indication of impact in terms of continuing institutional inputs and practices in the home.

The importance of menstrual hygiene was also discussed, and this often neglected and taboo issue needs to be discussed and provisions made through our WASH in schools interventions to ensure the privacy and dignity of girls and indeed female teachers.

The need to avoid ad-hoc interventions was clear from both studies, all presentations and discussions during this session. A complete package includes not just facilities, but hygiene education and promotion, teacher and PTA training and working with school management and government to ensure management and maintenance. Recommendations:

1. WASH in schools needs to be implemented as a complete package if we are to have impact the construction of facilities alone is not sufficient to ensure good WASH in schools.
2. Girls' privacy and dignity needs to be ensured especially when they reach puberty and menstrual hygiene needs to be considered in all WASH in schools interventions.
3. More work is needed on the impact of WASH in schools interventions both on school children and the wider community. The evidence base needs to be strengthened.

## Europe's Sanitation Problem: 20 Million Europeans Need Access to Safe and Affordable Sanitation

Convenors: Women in Europe for a Common Future (WECF), Global Water Partnership Central and Eastern Europe (GWP CEE), Coalition Clean Baltic, Earth Forever, Bulgaria, Euroteleorman Romania and Creative Slovakia

The seminar "Europe's Sanitation Problem" at the World Water Week addressed the problem of more than 20 million European citizens who do not have access to safe sanitation. The women's network "Women in Europe for a Common Future" convened the seminar to draw attention to the fact that in European member states children are at risk of blue baby disease, hepatitis-A and gastrointestinal diseases due to unsafe sanitation. Around 150 participants from all sectors participated. After the seminar, a group consisting of 46 participants attended a study visit to 2 Stockholm neighbourhoods with innovative onsite sanitation.

The lack of safe sanitation in rural areas in the European Union was presented in films, pictures and statistics. The common system of pit latrines especially in rural Eastern Europe are a cause of groundwater pollution in many villages which depend on wells for drinking water. The unsafe water and sanitation situation adversely affects public health and thus hinders the economic development in the region.

Project examples from Romania and Bulgaria showed that the introduction of dry urine diverting toilets, hand washing facilities and greywater treatment in villages without central water supply improves the health conditions at once.

The European Commission said that it is of importance to address the governance issue. The Commission wants to publish a new version of the EU guide on small-scale sanitation for solving Europe's rural sanitation problem. Additionally the Commission wants to enter into dialogue with the authorities, funding agencies and NGOs in new Member States to find solutions for the urgent sanitation problems.

WECF calculated that based on sustainable dry sanitation systems demonstrated in Romania and Bulgaria, comfortable indoor bathrooms with toilets for households would cost 600 euro per household. Therefore, if all households without access to safe sanitation obtained such systems, less than 480 million Euro would be needed for an immediate solution. Compared to the total budget of more than 336 billion euro of EU structural funds, the financial aspect should not be a barrier.



## Making Regulation Work for the Poor: Accelerating Access to Urban Water Supply

Convenors: German Agency for Technical Cooperation (GTZ), Building Partnerships for Development in Water and Sanitation (BPD), Agence Française de Développement (AFD) and Water and Sanitation Program (WSP)

Increasingly regulation is being assessed not only on its ability to drive utilities to greater efficiency, but also on the role it plays in ensuring services reach poor communities. This is particularly true in developing countries, where often half of the population (many of them poor) currently receive little or no service from the formal utility. Rightly enough sector regulation (and those that apply it) is under the spotlight.

This is the backdrop to an energetic session recently convened at the World Water Week by BPD, GTZ, WSP and AFD. The aim was to get debate and discussion going amongst participants and happily over a hundred practitioners engaged wholeheartedly in (often energetic) discourse. This debate was framed around four (deliberately controversial) statements:

1. Regulators have little impact on improving access for the poor
2. Tariff regulation is more relevant to richer communities than poor ones
3. The regulator should directly engage informal providers
4. Consumer voice mechanisms are beyond the reach of the poor

Much of the discussion however took place on roundtables as each participant made up their own mind whether they agreed or not with the statements, prompted by voices from the field and a diverse panel.

The consensus was that effective regulation is particularly important in order to spread the benefits of water services widely, and this should be applied both to the poor and better-off. Regulation needs to be very sensitive to the local context, often acknowledging that very many people are not connected to the formal network. All benefit from the utility being effective and financially viable, but the 'regulatory umbrella' may need to reach beyond just the direct customers of the utility. While an independent regulator can be an invaluable asset, there are many others that can play a role, including customers and citizens themselves as well as government.

A longer session report, containing the crux of the debate, can be found at [www.bpdws.org](http://www.bpdws.org) and [www.gtz.de](http://www.gtz.de). See also [www.afd.fr](http://www.afd.fr) and [www.wsp.org](http://www.wsp.org).

## 5th World Water Forum Topic Bazaar

Convenors: The World Water Council (WWC) and 5th World Water Forum Secretariat

The 5th World Water Forum, which will take place on 16-22 March in Istanbul, Turkey, was prominently featured as a part of the Stockholm World Water Week activities and events.

An overflowing crowd of professionals and students from academia, government, business and science came to exchange ideas, debate and collaborate with Theme, Topic and Regional Coordinators at the "5th World Water Forum Topic Bazaar."

This roundtable seminar, organised by the World Water Council and the 5th World Water Forum Secretariat, gave the opportunity for World Water Week participants to contribute their valuable experiences and solutions to today's main water challenges as an integral part of the thematic development process for the preparation of the 5th World Water Forum. Topic Coordinators for each of the 5th World Water Forum's 23 topics led lively roundtable discussions. Together, the participants were able to discuss the key questions related to each topic, further develop session outlines and identify partners for each of the Forum's 100 sessions. The seminar encouraged collaboration and exchange among many different disciplines and regions in an effort to provide innovative solutions to global water challenges.

## Environmental Flows and Human Well-Being

Convenors: USAID Global Water for Sustainability Program (IMCAFS-GLOWS), Swedish Water House (SWH), Worldwide Fund for Nature (WWF), The Nature Conservancy (TNC), Global Environmental Flows Network (eFlowNet), DIVERSITAS, Global Water Systems Project (GWSP), UNESCO International Hydrology Program (UNESCO IHP), World Conservation Union (IUCN) and Wetlands International (WI)

This seminar explored the linkages between environmental flows and human well-being through research reports and case studies, and proposed new actions applying cutting-edge scientific and political approaches. An environmental flow is the quantity, timing, and quality of water flows required to sustain aquatic ecosystems and the human livelihoods dependent upon them. Case studies from Australia, Bangladesh, China, India, Iran, and multiple African nations were used to illustrate

how human health and well-being are inextricably linked to the ecological health of aquatic systems. Human communities depend directly on goods and services of aquatic ecosystems, including food to meet nutritional requirements, clean fresh water from springs, rivers, and lakes, and natural controls on pathogens. These ecosystem services underpin all subsequent interventions promoted by health, sanitation and hygiene programmes, either supporting or counteracting them. They also strongly influence efforts to combat disease, prepare for climate change, and achieve Millennium Development Goals.

Among the key findings to emerge from the presentations and subsequent discussion are: 1) an environmental flow is not an unproductive allocation of water but an allocation to support key elements of human well-being and achieve the goals of integrated water resources management; 2) environmental flows can reduce the prevalence of flow-related diseases like malaria and, through the preservation of aquatic biodiversity, epidemic diseases like schistosomiasis (bilharzia); 3) establishment of environmental flows must be tackled at regional scales and be strategically incorporated into development programmes; and 4) climate change poses daunting challenges to future water supply and allocations for instream uses, so action should be taken now to reduce the most obvious non-climate and climate threats to sustaining water and freshwater ecosystems. More information on these and other priorities can be found on the web pages of the convenors.

## Side Events Tuesday 19 August

### Asia Day; How is Asia Adapting to Climate Change?

Convenor: Asian Development Bank (ADB)

The main speaker, Professor Toshio Koike from the Department of Civil Engineering, University of Tokyo, began by saying that climate change mitigation is a gas issue while climate change adaptation is a water issue. He argued that the risks and costs to a programme of action are far less than the long-range risks and costs of comfortable inaction. Prof. Koike also gave examples of climate change's impacts on Asia's urban, rural, and basin water sectors and ongoing adaptation strategies currently addressing these impacts. Given that the incremental cost to Asia for climate proofing infrastructure is estimated at 5-20% of base investment cost, reactor Suresh Prahbu, Member of the Indian Parliament and Chair of GWP South Asia, questioned whether Asia is prepared to finance the required climate change adaptation programmes.

The ensuing discussion was wide-ranging, covering the treatment of climate change as a development rather than environmental issue, concerns about the harmonisation of adaptation planning across the rapidly expanding range of financing windows offering support, the differential impacts of climate change on the poor and the 1.2 to 2.0 billion affected by water scarcity, and the impact of climate change on glaciers and the region's water resources.

### The Challenge of Improved Global Freshwater Governance and the 1997 UN Watercourses Convention: High Level Panel Debate

Convenors: Conservation International (CI), Green Cross International (GCI), INBO-Europe, The World Conservation Union (IUCN), Stockholm International Water Institute (SIWI), UNESCO Centre for Water Law, Policy and Science and World Wide Fund for Nature (WWF)

The side event brought together high level speakers from four different governments to discuss the relevance and applicability of the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses to their respective countries and regions. Chairing the event, the Secretary General of WWF Sweden explained that the UN Watercourses Convention provides an all-encompassing legal framework enabling states, their citizens and businesses to manage international watercourses sustainably, in conjunction and coordination with neighboring co-riparians. Jamie Pittock introduced the Convention, highlighting the gaps and failings in existing watercourse agreements and why the Convention is badly needed to offer adequate dispute prevention and settlement mechanisms, to provide for the minimum common rules that govern transboundary water management, and to guide the design of new or revised agreements. Discussions among government representatives included a commitment by Ghana to trigger the ratification process and an overall recognition of the value of the Convention to maintain peaceful relations between co-riparians and to improve the management of the world's transboundary basins. The importance of bringing the UN Watercourses Convention into force was reemphasised among other policy recommendation during the wrap-up session of the World Water Week.

## Asia Day: Asia's Rapid Economic Growth and its Impact on Water Resources and Services Session Facilitator

Designed as the closing session to Asia Day, the session explored how Asia can meet the water and sanitation needs of a burgeoning economy experiencing rapid population growth. Already the most populous region with two thirds of the world's population, Asia is expected to grow by another 500 million people within the next 10 years. The high level panels had a dynamic discussion of whether water should be considered a limiting factor to economic growth. All agree that without intending so, water and weather are already proving to be major factors affecting growth in the region. The increased frequency of weather disturbances resulting in increased flooding in South Asia is affecting crops and livestock, and displacing millions. The same holds true for China, where rapid growth in the past decades has led to deteriorating quality and quantity of freshwater sources, and with the need to further sustain growth and the growing trend of urbanization, the country is now paying ever greater attention to resource conservation.

The session concluded that Governments must play an even greater role in ensuring food security and the delivery of water and sanitation services, particularly in view of a growing population further complicated by climate change. To achieve these goals, investments in infrastructure are crucial, as is improved planning and coordination among sector players, civil society, and countries sharing river basins. But an important consideration is a tariff regime that ensures sustainability of utility operations and irrigation systems. For this, people must be educated about the need for cost-recovery based tariffs. Political will is crucial.

## Making Progress on Sanitation and Hygiene: Lessons from the Field and Breaking the Silence on Areas of Neglect

Convenors: IRC International Water and Sanitation Centre and WaterAid

This event was organised primarily to present an overview of the different challenges faced in the areas of both urban and rural sanitation in South Asia, and the good practices in the region that were presented at a practitioners workshop in Bangladesh in January 2008.

The session was also used to highlight two burning yet neglected issues. One was the practice of manual scavenging in India. A particular section of the population – dalits – are compelled to empty public and private latrines and pick up human waste from the railway track with their hands, and thus complete the sanitation chain in the cities and villages of India. It being deeply ingrained in the caste system has meant that laws enacted to abolish the practice have had little impact in bringing an end to this dehumanising and exploitative practice. The other neglected topic discussed was menstrual hygiene management and the shame and silence surrounding menstruation, the extortionate costs of sanitary pads and the use of dirty rags which impacts on women's health.

Both are issues on which we need to work harder, and the discussions in this session was one step towards breaking the silence on these taboo subjects.

## Making a Difference: Enhancing Research by Scientists in Developing Countries on Sanitation

Convenor: International Foundation for Science (IFS)

Co-Convenors: Capacity Building for Integrated Water Resources Management (Cap-Net), Bangladesh Centre for Advanced Studies (BCAS), Centre Régional pour l'Eau Potable et l'Assainissement à faible coût (CREPA), WaterNet and Maji na Ufanisi, Kenya

The event discussed the importance of linking water and sanitation initiatives in developing countries to scientific research generated by scientists from these countries. The importance of empowering young researchers and end-users was emphasised in the process.

Using the open-space model, seven cases studies developed by the co-convenors were presented as a basis for discussion through small walk-in groups involving all participants followed by plenary.

Discussions acknowledged the central role of locally-led research. The importance of addressing sustainability, the vulnerability of the local research infrastructure through equal opportunity South-South and North-South partnerships and through innovative dissemination of research results were all issues identified and should be addressed as part of the research-policy nexus. Capitalising on the existing social learning through evaluation and impact assessment of previous experiences was also stressed.

Participants were invited to join the ongoing efforts of IFS and the co-convenors in building on the outcomes of this event.



# Workshops Wednesday 20 August

## Workshop 3: Changing Human Behaviour – Prospects for Progress

Convenor: Stockholm International Water Institute (SIWI)

Co-Convenors: The United Nations Children's Fund (UNICEF) and Academy for Educational Development (AED)

### Incentives for Behavioural Change

Health benefits alone are not sufficient to change behaviour. Other incentives are needed such as: appeals to pride, civic duty, modernisation, and shame. More longitudinal studies are needed to demonstrate the sustainability of these changes.

### What are the Most Promising Target Groups?

Several presentations demonstrated the concern for finding target groups for pilot programs. However, more attention to “non-acceptors” is needed. These groups are usually ignored by the agencies, the least motivated, and the most difficult to motivate.

### Government, Political and Institutional Settings

While most of the attention focuses on water and sanitation institutions, there is a pressing need to broaden the governmental participation beyond its currently narrowly focused water agencies. Ministries of Finance, Health, Education, and Planning need to be involved in program development and implementation. In particular, the medical profession needs to be motivated to promote WSS programs. Also current research and monitoring activities are well grounded in engineering, science, and the social sciences with the exception of political science. Politics is a subject avoided by most water professionals to the detriment of the success of their programs.

### Role of the Private Sector

Given the problems of management and finance of water and sanitation programs, the private sector could be a major player in managing and providing services. In addition there is a large scope for providing materials for personal hygiene. However, there appears to be little information about the success of private sector participation in rural and small town schemes despite the expressed willingness of large corporations to participate.

### Menstrual Hygiene

Discussion of menstrual hygiene for adolescent girls is a subject largely avoided by all parties to sanitation: government, water institutions, the medical profession, schools, and, yes, even families. The promotion of menstrual hygiene should be strongly advocated by all participants in WSS.

## Workshop 5: Cost-Effectiveness in Pollution Abatement

Convenor: Stockholm International Water Institute (SIWI)

Co-Convenors: Swedish Environmental Protection Agency (Swedish EPA) and Nordic Environment Finance Corporation (NEFCO)

Cost Effectiveness is an important tool for prioritising pollution abatement. Abatement may be implemented through a mix of policy tools. Tools such as unit abatement costs are applied by several international financial institutions on a micro level. Most macro measures use regulatory, voluntary and economic incentives including legislative, tax, levy, cap and trade systems. Due diligence involves addressing multimedia cost-effective actions, with associated benefits, for point and diffuse sources. Successful actions are a function of correct definition and prioritisation. Transaction costs need to be clear. Fairness of who is to bear the cost has to be sensible and take into account shadow costs. For example, minimum costs vary by a factor of 10 (for a nutrient reduction target of 20 percent) depending upon what strategic option is chosen to mitigate Baltic Sea pollution. Contribution to nutrients and hygiene problems can be from human population in one region, and/or animal-, poultry- and fish-farms in another. Heavy metal and other contaminants from industrial sites highlight consequences of negligence resulting

in large remediation costs. Precautionary actions at source are generally cost effective. Regarding pharmaceutical substances, contemporary waste water treatment plants are not designed to handle breakdown substances. If unaddressed, the issue may pose substantial threat to human and ecosystem function. Impacts across environmental media and associated safety aspects must be addressed to capture sustainability. Pollution abatement has to heed technical, legal, financial and implementation realities and work out a triage for win-win solutions. Implementation time for abatement actions may vary up to 25 years. Macro measures may cost up to one percent of the gross domestic product (GDP). However, benefits can be greater, up to 3 percent or higher. Subsidies severely distort cost effectiveness evaluations and jeopardise countermeasures. Actions need to be justified by relation to population (abatement cost per capita) or its productivity (abatement cost per GDP). Common understanding of mitigation strategy facilitates successful implementation.

### Conclusions/Recommendations

Good cost efficiency evaluations are vital to abatement measures. Sustainable implementation is hampered by a number of parameters including inadequate funds, askew subsidies, scarce competent human resources, inflation, bureaucracy, opaque transaction costs etc. Abatement needs to cover point sources and non-point sources, establish correct baselines and achieve their acceptance. Regional and local infrastructure has to be understood. To progress it is recommended that the linkage between energy, food production and water be illuminated better in the changing world. Elements that need more work are

- Subsidies and their harmful impact on the environment and security in general;

- Application of polluter pay principles; capturing full cost recovery
- Fairness, ethics and principles of burden sharing
- Transaction costs for abatement regimes
- Contribution of point and non-point sources.
- Emphasizing source reduction (i.e. precautionary pollution prevention) as the most cost-effective practice.

## Workshop 6: The Sustainable City

Convenor : Stockholm International Water Institute (SIWI)

Co-Convenors: International Water Association (IWA) and Department for Infrastructure and Economic Cooperation, Sida (INEC) together with United Nations Human Settlements Programme (UN-HABITAT)

Concentration of people and activities means that large efforts must be made to meet the need of what man requires for daily life, when the resources are not within the city, and it also means that pollutants create unhealthy conditions and environmental problems, unless the city is not planned in a sustainable way. The infrastructure can not be planned with a narrow set of objectives, but must be suited to changes. The urban systems must be flexible, adapted to the environment and affordable. Most cities are going through change because of population growth, changing demographic conditions or climate change. It is not possible to define the sustainable city concept, more than that a sustainable city has to be able to cope with change, be a healthy place to live and its environmental footprints should be controlled. Participation and information must reach the user; planning is required at the household level to obtain full use of the urban systems and cultural acceptance. Demonstration projects help in explaining. Efficient systems are complex in different ways depending on scale and who is the user. Very centralized systems may be replaced by nodes of less complexity, yet more effective than very local solutions. Restorative development goes beyond local sustainability and gives benefit to the entire city or even river basin.

Striving for water neutrality requires integration across boundaries and planning on river basin scale closing water and nutrient loops. The footprints of the city on the local, regional as well as global scale need to be considered. Management of storm water is a key issue often forgotten. Improved drainage is important for hygienic reasons and for reducing the effect of flooding. The city is part of a river basin. The river influences the city and the city influences the downstream river.

In economically dynamic mega-cities there is potential for good infrastructure and to have effective systems, but these systems should be balanced against the risk of extreme natural events, accidents or other events affecting the health and safety of the citizens. The water systems within a city can be used to create atmosphere, including experiences with nature within the city.

The concept of sustainable cities should drive economic growth rather than suppress it. It may be so that planning after sustainability principles allows bridging between the rich and the poor world when meeting household demands and still achieving the concept of a sustainable city. Risk and change must be considered in the planning process. A multi-disciplinary approach is part of the sustainable city concept.

## Workshop 7: Water and Sanitation under Changing Climatic Conditions

Convenor: Stockholm International Water Institute (SIWI)

Co-Convenors: International Water Association (IWA) and Stockholm Environment Institute (SEI)

Climate change (CC) adaptation and mitigation are inseparable. Within the water community much of the debate on CC has focussed on adaptation. This workshop focussed on mitigation and how win-win solutions can reduce greenhouse gases (GHG) and provide socio-economic benefits within the water sector. CC can make us act as we should and the water sector has a duty to act responsibly and address mitigation as well as adaptation.

Water services consume lots of energy. Utilities must understand and then act to reduce their carbon footprint. There is a need to engage with IPCC to ensure water is included in COP-15 discussions. There are huge variations across climates, cultures and development levels, so response options vary. Also, it was cautioned that water stress is 80% due to demographics and only 20% to climate change.

Opportunities exist for good practices and improved technology and new standards to reduce GHG. Both providers of water and consumers must change behaviour towards conservation. Unfortunately, “efficiency has no constituency” (Kraemer) and technocracy is a major obstacle as it is fixated by suppliers, products and projects. There is lethargy and inertia in a water community dominated by engineer-run utilities and no incentive to change the way they operate. Technology fixes such as desalination uses 5x more energy/litre of water and may provide supplies, but are a disaster for CC mitigation. The ethics of engineers should shift from “harnessing nature” to “stewardship of nature”. More work is needed on incentives, for example through peer level recognition and reward for meeting mitigation benchmarks.

Policy initiatives are difficult due to complexity, but can influence and incentivise. However, if the risks from major catastrophes, such as sea level rise, are not taken seriously all other interventions will be nullified.

Urbanisation is critical in the fight against CC and municipalities need to be more engaged. Mitigation measures are economically feasible and attractive: examples include biogas digesters in households in China. Methane is a more severe GHG than CO<sub>2</sub> and carbon funds, available under the Kyoto Protocol, offer opportunities for financing win-win solutions to reduce GHG from wastewater anaerobic lagoons. However, the rules on use of funds need to be more extensive in any follow up to Kyoto. The Clean Development Mechanism (CDM) can play a leverage role to get improved technology with smart practices saving money, reducing water use and mitigating climate change.

## Seminars Wednesday 20 August

### Water and Climate Day 1: Opening Session

Convenors: Acacia Water, African Development Bank (AfDB), Commission on Climate Change and Development (CCD Commission), Co-operative Programme on Water and Climate (CPWC), European Investment Bank (EIB), European Commission's Directorate-General Environment, Federal Ministry for Economic Cooperation and Development, Germany (BMZ), Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany (BMU), Food and Agriculture Organization of the United Nations (FAO), Global Water Partnership (GWP), German Agency for Technical Cooperation (GTZ), Intergovernmental Panel on Climate Change (IPCC), International Centre for Integrated Mountain Development (ICIMOD), International Commission for the Hydrology of the Rhine Basin (CHR), International Groundwater Resources Assessment Centre (IGRAC), International Water Association (IWA), KfW Germany, Munich Re Foundation, Rainwater Harvesting Implementation Network (RAIN), Swedish Water House Cluster Group on Climate, Water and Vulnerability, Stockholm International Water Institute (SIWI), Department for International Development, UK (DFID), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP, tbc), UN Framework Convention on Climate Change (UNFCCC), United Nations Human Settlements Programme (UN-HABITAT), United Nations University – Institute for Environment and Human Security (UNU-EHS), United Nations Economic Commission for Europe (UNECE), World Bank (WB), World Meteorological Organization (WMO), World Wide Fund for Nature (WWF), World Water Council (WWC) and The World Conservation Union (IUCN)

As was stated by Mr. Anders Berntell, SIWI's Executive Director, during the press conference just after the opening session, climate change is an important issue, reason for two days dedicated to Water & Climate, organised by the Co-operative Programme on Water and Climate (CPWC), together with BMU. The kick-off of the two days was done with a presentation by professor Nigel Arnell, of behalf of the Intergovernmental Panel on Climate Change (IPCC), of the just-released IPCC Technical Paper on Water and Climate. The report states that observational records and climate projections provide abundant



evidence that freshwater resources are vulnerable and have the potential to be strongly impacted by climate change, with wide-ranging consequences for human societies and ecosystems. Water supplies stored in glaciers and snow cover are projected to decline in the course of the century. Higher water temperatures and changes in extremes, including floods and droughts, are projected to affect water quality and exacerbate many forms of water pollution. There is high confidence that globally, the negative impacts of future climate change on freshwater systems are expected to outweigh the benefits. Water resources management clearly impacts on many other policy areas, e.g., energy, health, food security and nature conservation.

The IPCC presentation was followed by a discussion and panel debate, chaired by Professor Pavel Kabat, CPWC. Panellists with regional perspectives were Bill Cosgrove, Dr. Vahid Alavian, World Bank, Dr. Peter Johnston, University of Cape Town, South Africa and Dr. Avinash Tyagi, World Meteorological Organization (WMO), Switzerland. The representative from the World Bank stated that guidance is needed for incorporating the impacts of hydrologic variability and climate change in investments, while climate change is seen as more than an unprecedented environmental challenge – it is a massive development, economic and social challenge.

The issue of deterioration of hydrological networks was raised by WMO. Without data no planning is possible. Climate change must not come at the cost of development. We need to find and support ways to reconcile the growth needs of developing countries while addressing climate change. Both must be done: mitigation, to avoid the unmanageable; adaptation, to manage the unavoidable. For adequate financing we should mobilise resources above and beyond the current ODA levels.

- Accelerate and broaden current investments in water resources management and development
- Focus on adaptation, but also mitigation where relevant
- Develop an effective menu of adaptation options: knowledge and capacity building, technology, infrastructure, policies, institutions, mechanisms for risk-sharing, mechanisms for financing, enable better decision-making under uncertainty, water services delivery and resource management
- Assessing impacts and vulnerability

## Water and Climate Day 1: Climate Change, Water and Development – Adaptation in Africa

Convenors: BMZ, CPWC, WB, GTZ, KfW and CCD

The seminar brought together perspectives from the financier's side and from adaptation practitioners from Africa. Development banks and other financing institutions have a great interest to invest in adaptation, which is hampered by the possibility to adequately link such projects to national priorities on the side of partner countries. It was clear that strategic planning for adaptation should be integrated in national development plans. But in many cases, countries do not yet have national adaptation strategies for the water sector or Integrated Water Resources Management (IWRM) plans, including related investment plans. Concern and awareness on country level regarding the lack of such strategies and plans is there, but the capacities to develop the needed is often lacking. This particular aspect of lacking adaptive capacity turned out very clearly, and must be a key issue for water sector development in Africa and other continents in the future. For donors, this means that efforts have to be made to support IWRM planning, in order to provide a basis for adaptation measures in the water sector. Only after agreement has been reached on the status of water resources now and the possible development of water demands, countries will be in a position to meaningfully target adaptation measures in the water sector. The creation of IWRM plans includes topics which are usually less attractive for politicians and donor representatives, such as the creation and consolidation of an adequate database. These have to be tackled as well.

The seminar made clear that adaptation to climate change must be an integral part of the development agenda, and the key message therefore is: Start adapting now! ...but with a plan.

## The UN-Water Seminar: Transboundary Waters – Sharing Benefits, Sharing Responsibilities

Convenor: UN-Water

Managing transboundary waters in an equitable and sustainable way is an important prerequisite for development and human security. The UN-Water Seminar illustrated – through examples of activities of UN organisations – progress, challenges and lessons-learned.

Appropriate legal and institutional arrangements are essential for successful transboundary water management. International conventions such as the 1997 UN Convention and the 1992 UNECE Water Convention are important frameworks for cooperation, but they need to be implemented. A culture of cooperation needs to be developed; the establishment of specific transboundary water agreements and of supporting institutions such as the Mekong Commission or the Nile Basin Initiative are essential steps.

Cooperation on shared groundwaters is even more difficult; thus the draft articles on the law of transboundary aquifers by the UN International Law Commission are a much needed tool.

Knowledge gaps, inadequate monitoring and unreliable data, lack of exchange of information and of harmonisation of assessment, as well as the failure to transform data in useful information for decision-making are common obstacles. Transboundary cooperation also suffers from problems of national governance (e.g. limited human and financial capacity, frequent changes in administrations and difficulties of cross-sectoral integration). Tense political relations between riparian countries can hamper the dialogue.

However, failure to cooperate is not an option, especially in light of challenges such as population growth, migration, climate change, globalised trade and looming food and energy crisis. Cooperation is a long-term process that requires step-by-step progress and flexibility to adapt. There are many success stories and good examples and UN organisations have often sustained and catalyzed transboundary cooperation. Coordination of action through UN-Water should further enhance their effectiveness to deliver.

The 2009 World Water Day devoted to transboundary waters is a good opportunity to catalyze political attention and shake the barriers to cooperation.

## Partnering with Business to Find Sanitation Solutions

**Convenors: World Business Council for Sustainable Development (WBCSD), Stockholm International Water Institute (SIWI) and United Nations Development Programme (UNDP)**

Sanitation is an essential component of a sustainable business environment. Companies are directly affected by the impacts of poor sanitation on their employees, families and the local communities in which they operate. On a larger scale the purchasing power of nearly half the world's population is impaired by the direct and indirect effects of poor sanitation. This has a huge impact in reducing market potential.

Progressive companies around the world are already making a positive contribution to the sanitation challenge. Investing in sanitation brings clear benefits, the estimated economic return from improved sanitation is about USD 10 for every USD 1 invested. However, it is only by engaging multiple stakeholders that society as a whole will be able to achieve the MDG target and more.

The seminar therefore explored questions including: "What do we mean by sanitation? How to and why partner with business to address this challenge? How can partnerships make a significant contribution?"

Some key issues for consideration emerged from the lively debates:

- Sanitation is multi-faceted. It is not just about toilets. The emphasis should be on integrated water resource management, including wastewater treatment, recycling and reuse.
- There is a business case to strategically invest in sanitation. This is not about philanthropy. To be sustainable business contributions need to entail a return on the investment made. Showcased benefits include better operational efficiency, creation of new markets, and a healthy and productive workforce.
- Interacting with governments at all levels to create the right framework conditions for business to make an effective contribution was strongly stressed.
- Building local knowledge and technological skills is fundamental to implement sustainable solutions that can be scaled up over time.
- Multi-sector initiatives are most effective. When everyone is around the table and contributing their share, projects are implemented more efficiently, because each partner can leverage each others' skills.

Although corporations will be challenged in different ways, sanitation is everybody's business. There is a 'sanitation ladder' that people climb with increasing wealth and development. This concept points to the various needs that can be met by a variety of businesses addressing different aspects of the challenge. There is no single answer and there is no single solution. But a lot of experience in sanitation exists at different levels and needs to be integrated in an effective manner to find solutions.

## New Frontiers of Sanitation

Convenors: Asian Development Bank (ADB), Diageo, International Water Association (IWA), Suez Environment, United Nations Secretary General's Advisory Board on Water and Sanitation (UNSGAB), UN-Water and World Bank (WB)

The seminar concentrated on the 'used water' dimension of sanitation – wastewater as it is known today, and the new resource the panellists hope that it would represent tomorrow. Panellists discussed new approaches, concepts and technologies.

First, the seminar explored how different players are changing the way we dispose of wastewater. Wetlands can provide sanitation services, or can be damaged by pollution – it depends on planning, research and attention. The Japanese Johkasou toilet system produces high quality clean water from wastewater and is a relatively cheap option for dispersed areas – especially compared with water and sewage mains. The beverage industry is keen on advanced wastewater treatment in water stressed areas, and seeks innovation because “the less water we demand the lower our costs”. One of the main obstacles cited was that traditionally trained engineers and sanitation departments need to become a lot more conversant with alternative methods AND the players that know about them.

Next, the seminar covered wastewater harvesting. China is making big steps forward in terms of wastewater harvesting, treatment and wastewater reuse. Urban agriculture increasingly contributes to food supplies in cities, and crops are often irrigated with harvested wastewater. However, the health risks associated with inadequately treated wastewater can be high unless managed. Improved approaches need to be studied and promulgated to bring urban agriculture and wastewater reuse out of the shadows.

Finally, the session discussed the energy dimension of sewage treatment processes. Conventional sewage treatment requires a lot of water and energy but there exist real ways to save water and create both nutrient products and energy. Rethinking and re-engineering to allow for faeces/urine separation at source and concentration and harvesting of nutrients at the initial stages are the key.

### Conclusions/Recommendations:

- Capacity building in skills is needed for engineers to better understand demand driven/resource harvesting approaches for developing new used water treatments.
- Conservationists should be involved in early stages of discussion regarding changes in sanitation and sewage treatment.
- Johkasou sewage system can be explored for cost-effective dispersed areas solutions.
- Especially in water stressed areas, the beverage industry has an (economic) interest in advanced wastewater treatment.
- In view of high prices for fertilisers, there is a need to look at recapturing of nutrients from wastewater.
- Waste water harvesting and safe reuse in urban agriculture deserves much more attention.
- Overcome the psychological barrier for water reuse. Information campaigns needed.
- Energy saving for wastewater treatment starts by separating at source.

## Water and Sanitation Advocacy: How Can We Convince You?

**Sub-theme: Human Behaviour and Communication for Desired and Necessary Changes**

Convenors: Water Supply and Sanitation Collaborative Council (WSSCC) and WaterAid

The seminar presented the two largest advocacy campaigns in the water and sanitation sector: “End Water Poverty” and the “Global WASH Campaign” and aimed at conveying success stories and debating the dynamics of advocacy in the sector.

Mr. Steve Cockburn introduced the End Water Poverty Campaign as a coalition of non-profit organisations strengthening the voice of civil society in 35 countries to influence their governments' WATSAN agenda. With the approach “from Local to Global”, EWP aims at a global action plan for watsan, the development of national watsan plans, a sound donor commitment, while focussing on the poor communities in low-income countries. Ms. Saskia Castelein gave an overview of the WASH Campaign and its approaches on both global and national level. Launched in 2001 to advocate for a sanitation target in the MDGs, the campaign has been picked up by WSSCC's worldwide network and has resulted in a broad range of national level WASH advocacy activities. Examples were given of the WASH Campaigns in Madagascar and Ethiopia.

However, the “live”- stories came from the following speakers, Mr. Dounantie Dao from Mali and Mr. Umesh Pandey from Nepal. Mr. Dao gave an in-depth overview of the EWP Campaign in Mali, where the coalition is communicating clear messages by strong people which are understood by all layers of the population. Besides the technical departments at various ministries, the president of the parliament and financial partners, the EWP targeted successfully the President of Mali. Mr. Dao stressed as immediate impact of the lobbying efforts the first steps towards a sanitation policy.

Mr. Pandey presented different activities under the umbrella of the Nepalese WASH Campaign: lobbying for a separate and increased budget line for sanitation, mobilisation of the media to create general awareness and increase the political will,



in addition to substantial investments in communication and knowledge sharing through workshops, newsletters and other WASH publication materials.

Mr. Jon Lane opened the discussion by asking the Mr. Sharma, Joint Secretary of the Ministry of Physical Planning and Works, how the WASH Campaign has influenced him as a top civil servant of the government of Nepal. Mr. Sharma stressed that changes are being made at top-level where the need for, and importance of sanitation has been understood. However, the difficulties lie in the next steps, namely the implementation phases. Therefore, advocacy should not only target national level politicians, but also decision makers at local and district level.

The debate highlighted the importance of partnering with other sectors as for example with the human rights activists to support access to water and sanitation to be recognised as a human right.

The panel debate after the break, moderated by Mr. Oliver Cumming, raised topics such as how to use campaigning to create demand and to support sanitation as a business, or as Jack Sim of the World Toilet Organisation put it, we need to design a Sanitation IKEA for the poor people. The importance to sell sanitation not only as a technical issue but to translate it as emotional goods such as privacy and dignity, were echoed by various participants. So-called unreclaimed territory of “northern advocacy” was presented by George Yap, where he elaborated on a recently created lobby group of 19 NGOs to influence the Canadian Government on watsan issues. However, the tone of the discussion was that for campaigning in the watsan sector to be successful, one needs to engage with other sectors. It was demonstrated that this set up is already happening in successful national level campaigns, however, building cross-sectoral alliances at the global level still remains to be a challenge.

## Virtual Water and Water Footprint: From Theory to Practice

**Convenors:** University of Twente, The Netherlands (UT), Worldwide Fund for Nature (WWF) and UNESCO Institute for Water Education (UNESCO-IHE)

This year's Stockholm Water Prize recipient, Prof. Tony Allan, presented the opening lecture ‘Virtual Water: A Concept, a Word, Much Discursive Politics and Increasing Policy Engagement’ on the evolution of his virtual water concept and its applicability today. Prof. Allan described how his theory of water through trade has been received over the years and how new insights and measures of his work have moved into the public and private spheres. His work on green water was highlighted as well as thoughts on the future for this concept and water more generally.

Prof. Arjen Hoekstra, who is responsible for quantifying virtual water into actual volumes, presented an overview of where this quantification has taken Prof. Allan's theory. Called ‘Water Footprints of Consumers and Producers: From Accounting to Impact Assessment to Policy Formulation’, Prof. Hoekstra's presentation touched on the application of water footprints and their growing currency as well as the methodological steps required in estimating them. This presentation highlighted various country studies that have been carried out as well as possibilities for calculating individual water footprints.

Alberto Garrido from Complutense University in Madrid presented ‘Virtual Water and Water Footprint: A Case Study from Spain’. The virtual water and water footprint analysis in Spain, differentiating the green and blue water components and different years and regions, provides new and innovative perspectives to look at water resources management in this country. In this sense, this study points to revisiting the ‘water scarcity’ paradigm in light of the virtual water trade.

Stuart Orr from WWF was the last speaker and gave the view of civil society and their use of the water footprint concept. Mr. Orr presented a WWF report on the Water Footprint of the UK and the implications for business, government and consumer audiences. The business audience in particular has become engaged in measurements of water and also seek to define ways in credibly responding to their water impacts.

The panel discussion for all four presentations was lively with a range of questions pertaining to the messaging of the water footprint work and implications for business and government.

## Founders Business Seminar: The Business Case for Wastewater

**Convenors:** Stockholm Water Foundation (SWF), Stockholm International Water Institute (SIWI), World Business Council for Sustainable Development (WBCSD) and Royal Swedish Academy of Engineering Sciences

The Founders Business Seminar 2008 focused on how to develop the “Business Case for Wastewater” by linking business and other stakeholders. The panel included representatives from Mouchel, Orange County Water District, Borealis, Black & Veatch and ITT Fluid Technology. The rate of depletion in water resources and the cost for sanitation is a challenge for business. The challenge presents an opportunity for companies to improve their competitive position through innovation,

improved operational performance, new business models, and partnerships with other stakeholders.

Some of the focal points of the panel's discussion were:

- The industry needs to collaborate more closely to secure investment to deploy new sanitation solutions, due to long adoption periods.
- New revenue streams should be investigated from the value to be gained from “resale” of purified water or shared investment in exchange for purified water.
- Additional revenues from bi-products, fertiliser, sludge products and biogas were also seen as contributing to the business case.
- Clearly, there are solutions and technologies that can be deployed by one municipality to another, leading to more cost-effective sanitation operations. Knowledge sharing of best practice is critical to this.
- On the question of whether suppliers in the industry would be willing to assume risk in developing countries' sanitation projects in order to capitalise on potential revenue streams from the resale of purified water or bi-products, the conclusion was that such an interest exists among suppliers. However, a prerequisite is that there is a well-defined regulatory environment for such businesses to prosper, which is currently not the case.
- However, the opinion was expressed that the problem is not the money available for investment, but rather the sense of urgency among municipalities to deploy these funds. In many developing countries, the decision-making process is simply too slow.

## The Protocol on Water and Health: Where Health, Environment and Development Policies Meet

**Convenors:** Norwegian Ministry of Foreign Affairs, Norwegian Ministry of Health and Care Services, Romanian Ministry of Environment and Sustainable Development, Swiss Agency for Development and Cooperation (SDC), Swiss Federal Office of Public Health (FOPH), United Nations Economic Commission for Europe (UNECE) and Regional Office for Europe of the World Health Organization (WHO-EURO)

Water-related diseases pose a serious threat to people's lives and well-being across the world, and, contrary to common misconception, also in the pan-European region. While lack of safe drinking water and sanitation are recognised causes, the toll on human health from polluted water used for irrigation, bathing or for aquaculture and shell-fish production should not be underestimated. The causing factors belong to different policy sectors: health, environment, agriculture, water, infrastructure, tourism, etc.

There is a need for cooperation between different authorities to set common, coherent and reachable targets in order to tackle causes and effects, address the issue in a holistic manner and ensure step-by-step progress.

Setting joint targets and establishing surveillance systems to reduce the current burden of water-related disease and prevent and respond to water-related disease outbreaks are at the core of the Protocol on Water and Health.

The Protocol supports a partnership approach that brings closer together health and environmental legislation and institutions, national and local authorities, the public and government institutions, donor and recipient countries.

The Protocol offers a framework where countries can join forces to address these complex issues in a more efficient way, learning from each other.

Two mechanisms are rooted in the Protocol to ensure such cooperation and mutual assistance: the compliance procedure – that combines review of Parties' compliance to their obligations with facilitation of enforcement – and the Ad Hoc Project Facilitation Mechanism – that facilitate coordination of donor action and response to recipient countries needs.

Moreover, the Protocol puts great emphasis on local communities in rural areas, secure room for public participation and encourage civil society to take action.

The flexible Protocol's approach allows countries to address local problems related to water and health and at the same time take into account global issues such as climate change, to which the water and sanitation facilities need to adapt now.

## The Right to Water and Sanitation: Approaches and Practical Implications

**Convenors:** Swedish International Development Cooperation Agency (Sida), Stockholm International Water Institute (SIWI), Centre on Housing Rights and Evictions (COHRE), Dutch Ministry of Foreign Affairs (DGIS), United Nations Development Programme (UNDP), United Nations Human Settlements Programme (UN-HABITAT) and Swedish Water House (SWH)

Using case studies from South Africa, India, Kenya and Argentina, Europe and the CIS the seminar examined approaches to and practical implications of the Human Right to Water and Sanitation defined as the “right of everyone to sufficient, safe, ac-

ceptable, physically accessible and affordable water for personal and domestic uses” by the UN Committee on Economic, Social and Cultural Rights in 2002. As an authoritative statement, this entails an obligation for governments to implement it.

The case studies pointed to difficulties in ensuring that policies and mechanisms for allocating safe and affordable water favour the poor and marginalised. Fragmentation and overlap of responsibilities among decisionmakers make it difficult for citizens to enforce their rights, the lack of enforcement mechanisms enables service providers to evade their responsibilities, the poor pay high prices for unclean water from private vendors, people’s behaviour as part of their socio-cultural context can prevent the realisation of the right, women are discriminated against, and community participation in decisionmaking often remains inefficient. Also, governments often lack sufficient institutional and financial capacity to implement the right.

Solutions, in brief, include enforcement mechanisms for service providers, including controlling prices by private water vendors, simplifying access to information from governments, and recognising the right to information and participation for a meaningful communication between stakeholders. NGOs in turn, should avoid unhealthy competition in representing communities. For successful programs, strategic communication is needed to change people’s behaviour. Privatisation of water services does not have to be ruled out, if a pro-poor focus is possible on a competitive market. Sanitation requires further definition in terms of human rights.

Obligations for the international community include providing sufficient aid and assuring that projects do not violate the right to water. Donors should also share lessons learned when implementing the right, support countries to identify national needs, support civil society in claiming their rights, and identify opportunities to integrate access to sufficient, safe, acceptable, physically accessible and affordable water and basic sanitation into national development agendas.

## Innovations in Groundwater Management for the Middle East and North Africa Region

Convenors: Stockholm International Water Institute (SIWI), Federal Institute of Geosciences and Natural Resources, Germany (BGR), Federal Ministry for Economic Cooperation and Development, Germany (BMZ), Swedish International Development Cooperation Agency (Sida) and International Hydrological Programme of the United Nations Educational, Scientific and Cultural Organisation (UNESCO-IHP)

A call to submit innovative approaches for managing shared groundwater in the MENA region resulted in over 70 ideas. Twenty were selected by a panel of experts and presented at the World Water Week. They covered technical topics related to groundwater assessment, data processing and mapping, as well as new ways of managing groundwater and discussions on cooperation across borders. It is evident that a lot of innovation is taking place in the region.

Many countries in the Middle East and North Africa (MENA) Region rely to a large extent on groundwater as their main source of fresh water. Many of the aquifers are shared between several countries. With the current over-use of groundwater, an increase in individual consumption and an unmatched growth of population there is a need for rethinking on water management in the region.

During the week a conducive environment for exchange between people from the region was created. The seminar consisted of two workshops, oral presentations and interaction with WWW participants, and two poster-presentation sessions. An exhibition area functioned as a meeting point for the seminar participants and other interested people.

The discussions at the different events brought forward needs and examples of innovation in three different areas; 1) technical (resource)/knowledge; 2) implementation & management; and 3) policy & planning. Examples that were brought up included: using expertise from different countries in the region to learn from each other and introduce new technologies to improve data sharing and dissemination; the use of regional institutions to promote groundwater management; zone management of aquifers; use of economic instruments for water conservation and; ways of bridging the gap between technology and policy implementation. The results from the seminar and proposed next steps to promote innovation will be published later this fall by SIWI.



# Side Events Wednesday 20 August

## Water and Climate Day 1: Upscaling of Local Water-Harvesting and Groundwater Recharge: Coping with Climate Change in Semi-Arid Regions

Convenors: Rainwater Harvesting Implementation Network (RAIN) and Acacia Water Sponsor: Swiss Re

During a session focusing on upscaling of rainwater harvesting and groundwater recharge for water supply in semi-arid regions, the need and opportunities for large-scale implementation of these successful techniques were recognised. The discussion on the actual status and upscaling of rainwater harvesting and groundwater storage was facilitated by Ethiopia's Head of Department of Water Supply and Sewerage and illustrated with cases from Ethiopia, West Africa and Nepal.

Field illustrations emphasised these techniques have significant local impact on water supply, health and agriculture and help in realising the basic human right to water. Jointly with its functional sustainability, these technologies lend themselves particularly well to achieve the MDG targets. It was agreed upon that policy makers and donors should adopt and work on the extension efforts for large-scale access and implementation of these technologies in water scarce areas. Two main issues for successful upscaling emerged from the discussion: water quality protection and the cost for storage in relation to other options.

## Upscaling the Delivery of Millennium Development Goals (MDGs) Through the Sector Wide Approach Programme (SWAP)

Convenors: Department of Water Affairs and Forestry, South Africa (DWAF) in collaboration with: European Union (EU), IRC International Water and Sanitation Centre and KPMG

This event aimed to share the experiences and challenges in meeting the Millennium Development Goals water and sanitation targets in Southern Africa through the Sector Wide Approach Programme (SWAP) developed by the World Bank and the European Union.

Some of the key learning points that emerged from this event are: Through political commitment and allocation of resources, the South African Government met the MDGs for halving the water and sanitation MDGs well ahead of the target. Ms Mbassa from the Department of Water Affairs and Forestry (DWAF) noted that it is essential that all role players are involved in such a process; this includes the alignment between different government departments. Mr Jeff Shaw from KPMG emphasised the need to obtain and effectively manage donor and other funding in the form of sustainable financing strategies. This means that "bankable plans" with a strong risk management and mitigation component need to be in place. In a joint presentation made by Mr Pelpola from DWAF and Mr Ramoeli from the Southern African Development Community (SADC Water Division), the structures of the Masibambane Sector Wide Programme in South Africa were highlighted. They referred to the political decisions made at the recent AU Summit to take a 'business unusual approach' to prepare national strategies and action plans for achieving MDG targets for water and sanitation over the next seven years. They presented a model on how MDGs can be met in the SADC region over seven years through programme development support using the DWAF model and a programme development support unit located in the fourteen SADC countries. A pilot project to illustrate the model to support the attainment of MDGs in the Katanga Province in the DRC was presented. In answer to a question from the audience, Mr Pelpola highlighted the need to "walk the talk" and to have programmes to scale if the targets are to be met. There is a need for countries to cooperate, learn from each other and mobilise donor and other financing.

The session was attended by the South African Minister of Water Affairs and Forestry, Ms Lindiwe Hendricks, the South African High Commissioner to Stockholm and other dignitaries.

## A Strategic Partnership for Water and Sanitation in Latin America and the Caribbean

Convenors: United Nations Human Settlements Programme (UN-HABITAT) and Inter-American Development Bank (IADB)

The side event on “A Strategic Partnership for Water and Sanitation in Latin America and the Caribbean” was co-convened by UN-HABITAT and the Inter-American Development Bank (IADB). It was chaired by Bert Diphooorn, Ag Director, Human Settlements Financing Division of UN-HABITAT. The event provided an opportunity to share progress and explore further the modalities for collaboration between UN-HABITAT and the IADB.

Luis Garcia, a regional expert, presented the framework for water and sanitation in Latin America and the Caribbean. Andre Dzikus of UN-HABITAT presented UN-HABITAT’s Strategy for the region. WSLAC’s strategy for Bolivia and Colombia, activities under the Spanish Millennium Development Fund, and the Water Operators Partnership (WOPs) in Latin America and the Caribbean were also presented at the side event.

Key recommendations from the side event included:

- The synergy created by the partnership between IADB and UN-HABITAT is a key window of opportunity, which should be promoted and emulated in the water and sanitation sector in the region.
- The development of new financing instruments by the IADB such as line of Credit Water Express for efficient water operators, and the creation of a multi-donor fund dedicated to the water and sanitation sector will improve technical assistance and finance pilot projects and activities related to knowledge dissemination. Local-level partnerships established by UN-HABITAT with central and local governments, organisations of civil society and the private sector in Bolivia, Colombia, Ecuador, Mexico and Nicaragua are critical to the replication and upscaling of WSLAC’s activities.

## Water and Climate Day 1: Response of IFIs to Major Challenges in the Water Sector: Launch of the EIB Water Sector Lending Policy

Convenor: European Investment Bank (EIB)

The European Investment Bank (EIB) presented its new water lending policy at a side event on the 20 August 2008 in the presence of representatives from environment/water ministries, bilateral and multilateral agencies, public and private utilities, industry, water sector organisations and NGOs. The event was opened by the EIB Vice President in charge of environment activities, Simon Brooks, followed by a presentation by José Frade (Head of Water & Environmental Protection Division) of the rationale and key aspects of the new lending policy. The participants’ discussion around the lending policy covered among other issues: coordination between donors; EIB value added, technical assistance and support to EU Member States, candidate and neighbouring countries; Climate Change adaptation criteria; the role of civil society; focus on projects aimed at achieving the MDGs; and support for regional projects in Africa. All the documents disseminated at the side event are available on the EIB website: [www.eib.org](http://www.eib.org)

## Efficient and Sustainable Policy and Practice: Water Governance in Southern Africa through the Lens of the Trialogue Model

Convenor: Council for Scientific and Industrial Research, South Africa (CSIR) and Stockholm International Water Institute, (SIWI)

Effectively functioning political, social, economic and administrative systems are needed to develop and manage water resources and supply these to society. Good governance in the water sector is faced by several challenges. These include information overload, the current rate of change, issues related to accountability and complexity, and inadequate science communication. Possible solutions are appropriate decision support systems that have been developed to support transdisciplinary integration and participation, and benefit sharing, which is about negotiating the status quo and overcoming the water induced barrier to socio-economic development in South Africa and elsewhere. A need exists for the practical use of science and for innovative scientific thinking and robust methodologies to support decision-making. Such methodologies should involve the three actor

clusters of the Trialogue Model, science, society and government. The lessons learned should subsequently be shared between the actor clusters to promote co-learning and change behaviour where necessary.

## Becoming Bankable: Experiences and Challenges in Market-Based Finance in the Water Sector

Convenors: UNEP Finance Initiative (UNEP-FI) and Water & Sanitation Program (WSP)

There is growing consensus that private finance for water projects makes sense not only because of the increased availability of additional funds in a chronically under-funded sector, but because it forces water schemes to be financially efficient and therefore sustainable in the long term. The discussion is not about whether to privatise or not. The question is how the financial sector and capital markets can become the dynamic sources of sustainable funding for the water sector as they are for other sectors of the economy.

Water utilities must become bankable and this entails a fundamental shift in paradigms: utilities must plan projects in a way that private financiers and capital markets can understand and assess. Projects must include strategies that ensure their ability to meet debt service obligations (or dividend expectations). Concretely, financial viability will depend on the project's expected ability to ensure (among others):

1. Billing efficiency
2. Public acceptance through demonstrable service improvements or/and network expansions
3. Tariff predictability and reliability
4. Transparency of financial flows
5. Water resource efficiency
6. If relevant, foreign exchange risk mitigation.

The concept of corporatisation can be promising in achieving management efficiency, accountability and independence of water utilities while at the same time avoiding the entire privatisation of water supply and sanitation networks. It also enables public authorities to channel public funds where these are most needed, for instance, to finance output-based subsidies.



# Workshops Thursday 21 August

## Workshop 8: The Lingering Failure of Sanitation – Why?

Convenor : Stockholm International Water Institute (SIWI)

Co-convenors : Department of Water and Sanitation in Developing Countries (Eawag/SANDEC), German Agency for Technical Cooperation (GTZ) together with Sustainable Sanitation Alliance (SuSanA) and Water Supply & Sanitation Collaborative Council (WSSCC)

Sanitation is a key to dignity, health, food, drinking water, environment, and economic growth. It is a fundamental imperative for all societies, yet, 2.5 billion lack it and the sanitation MDG target is off track. Looking back, some reasons cited for the failure of sanitation are: (i) a mismatch and gap in objectives for urban and semi-urban areas (from households to the city level and beyond), (ii) too many actors, conflicts and dysfunction possibilities at potential actions, (iii) the fact that sanitation is usually supply driven instead of demand driven, and (iv) the taboo factor, which makes sanitation difficult to "sell".

For the future, participants agreed that balanced solutions are needed. They must be socially acceptable; economically, technically and institutionally viable; and protective of the environment and the resource base. Sustainability is paramount, as sanitation must be demand-driven and affordable for people. It should also minimise energy consumption, promote resource reuse, and limit environmental impact.

Realistically, sanitation cannot be done over night. It is a development process that must be done community by community and tailored to the local situation. It is complex, too. Take one aspect: urban faecal sludge management. "When the pit is full," options include: pit emptying as a business; further development of appropriate emptying technologies; dissemination of knowledge locally; public education to support sludge management and reuse.

Sanitation professionals also need to engage a wider range of actors, including the private sector. Too often we have preached to the converted. The many success stories and good sanitation solutions need to be disseminated to practitioners locally. Capacity must also be built and skills developed so that successes can be replicated. Planners, decision makers and engineers need to know about the range of sanitation systems and technologies.

Sanitation marketing and demand creation is a vital wave for the future. "Let the engineers do the engineering and have the marketers market sanitation" was a common refrain. Sanitation marketing has proven useful in the Community Led Total Sanitation (CLTS) approach, which has achieved behaviour change and end open defecation in many Indian villages. It offers possibilities for peri-urban and urban areas.

In the future, sanitation systems should also manage the entire waste stream. Problems should be solved on the smallest possible scale, closest to the point of production. They should be integrated and respond to changing urban environments. They should offer options that can be managed by local capacities. Technologies should be appropriate, low cost solutions. Further, planning should be effective and participatory, based on the available time and resources and rational principles and appropriate information. Leadership and accountability are important to avoid future lingering failures.

# Seminars Thursday 21 August

## Water and Climate Day 2: Adaptation Strategies in Europe

Convenor: Federal Ministry of Environment, Nature Conservation and Nuclear Safety (BMU)

The seminar provided examples from adaptation strategy development processes in Europe at national, regional and trans-boundary river basin levels and gave insight into the preparation process.

The EU-White Paper on Adaptation to Climate Change is planned to be issued at the end of 2008 as an overall strategic framework with specific focus on measures at EU, aiming at integrating climate change aspects stepwise into EU sectoral policies. Moreover, it is being considered to focus on EU funding schemes, EU external relations and development cooperation. Therein, it is foreseen to address water as one cross-cutting issue.

The EU water legislation is being considered as suitable legal framework for coping with climate change in water management. National adaptation strategies or plans are already available in a few Member States and under preparation in many others. This clearly shows that water management is considered as an important issue, although partly with different focus.

Transboundary cooperation on integrating climate change into regional action plans has already been initiated at regional levels, like for the Alpine Region, as well as by development of River Basin Management Plans. First steps focussing on harmonising assessments of climate change impacts will be integrated as far as possible. Each country, however, faces diverse circumstances and will use different approaches to make their contribution in order to tackle climate change. Action by individual countries is not enough. It is essential to create a shared international vision of long-term goals and to establish international frameworks that will help each country to play its part in meeting these common goals. Thereby, a strong need for strengthening cross-sectoral and integrated approaches, involving e.g. agriculture, energy, transport and land use, has to be taken into account.

## Water and Climate Day 2: High Level Political Debate

**Convenor:** Co-operative Programme on Water and Climate (CPWC), The Netherlands and World Water Council, France

During the two Water & Climate Days, the Co-operative Programme on Water and Climate (CPWC), together with the World Water Council, convened a High Level Ministerial Dialogue Session on Water and Climate. Contributions were made by the water ministers from The Netherlands, Indonesia, Costa Rica and Lesotho, and by the Ambassador for Environment and Development of Denmark. The Indonesian Minister praised the work of CPWC on water-related climate adaptation, with reference to the joined Dutch-Indonesian workshop held one year earlier, leading to the development of an Indonesian national plan for adaptation. Lesotho's Minister stressed the need to re-open discussions on water storage as arid countries in sub-Saharan Africa do not have sufficient water; hence the need for improved storage of rainwater. The Water Minister from the Netherlands informed the audience on the preparations of a second Delta plan, aiming to make the Netherlands 'climate-proof'. She added that the Netherlands puts a lot of importance on good international dialogue on water and climate, and on the support of developing countries, where the most vulnerable communities live. The Danish Ambassador emphasised the need for closer cooperation between the agendas of the water sector under the World Water fora and the adaptation agenda of the climate-related Conference of the Parties (COPs). Answering a question from the audience on responsibility, the Dutch minister stated that it is important to first have insight into the costs of climate change and adaptation before we can talk about financing architecture.

## Water and Climate Day 2: Adaptation in Practice

**Convenors:** Worldwide Fund for Nature (WWF), Swedish Water House Cluster Group on Climate, Water and Vulnerability, Department for International Development, United Kingdom (DFID), European Investment Bank (EIB) and United Nations Development Programme (UNDP)

Whilst our knowledge of the scale of climate change impacts on water is increasing, there remains a relative vacuum of knowledge about how to adapt our river basins and water management to cope with the change. The purpose of this seminar was therefore to begin to provide quantitative case studies from four continents to demonstrate the social, economic and ecological benefits of effective adaptation measures, which include the establishment and strengthening of river basin management institutions, revision of water allocations, changes in agricultural techniques and crops, floodplain restoration and flood risk mitigation.

The seminar was convened by WWF (Worldwide Fund for Nature), Swedish Water House Cluster Group on Climate, Water and Vulnerability, Department for International Development, United Kingdom (DFID), European Investment Bank (EIB) and United Nations Development Programme (UNDP)

The main messages from the seminar were :

1. Strengthen water-relevant institutions. Climate-smart local, regional, and national water management institutions are essential for adaptation.
2. Develop "ecosystem-as-infrastructure" solutions. Invest in ecosystems as adaptation tools. They will be cheap, scalable, will not limit future adaptation options and deliver multiple benefits.
3. Adaptation-smart climate mitigation. Care must be taken to fully assess the impacts of climate mitigation infrastructure measures on water resources and ecosystems so as not to result in maladaptation.

4. Socio-economic benefits. Successful examples of self help adaptation strategies relied on visible and relatively immediate socio-economic benefits.
5. Don't wait for models. Learn by doing based on best current knowledge.
6. Upscaling and mainstreaming adaptation strategies are difficult but vital.
7. Funding predictability is just as important as the scale of funding.

## The Stockholm Water Prize Laureates Seminar: Global Sanitation – How Can Science Contribute?

Convenors: Stockholm Water Foundation (SWF) and Stockholm International Water Institute (SIWI)

The seminar was carried out as short presentations by six Stockholm Water Prize Laureates, followed by a panel discussions supported by comments and questions from the audience. The discussion was facilitated by Mr. Andras Szollosi-Nagy, UNESCO. The six Laureates were Mogens Henze (SWP Winner in 1992), Sven Erik Jörgensen (2004), Barbara Frost (1995), Peter Wilderer (2003), Perry McCarthy (2007) and Tony Allan (2008).

Peter Wilderer started the seminar by stating that science cannot contribute but that scientists can contribute by providing existing knowledge and by exercising research on issues where we lack knowledge. Among important research issues today is how to make reuse of water safe, acceptable and affordable. Reuse of water is the link between water supply and sewerage.

Mogens Henze concluded in his presentation:

- Science cannot contribute to alleviate the sanitation crisis
- New scientific findings will not change the world of sanitation
- Science has not neglected sanitation issues in the past
- Aid organisations and international organisations use research results
- There is no missing link between science and sanitation

Henze also remarked that there are far too many organisations worldwide addressing their pet issues (about 200 organisations at the WWW!).

Barbara Frost, Water Aid, put the question: “The science is clear, the economic arguments are sound – so why is it that the MDG for sanitation will not be reached?” She underlined her conclusions and message by some very aggravating figures and facts. What is needed is:

- Global sanitation action plan and global sanitation taskforce
- Commitment that no credible national sanitation plan should fail due to lack of finance
- Local action – EWP coalitions in developing countries calling on their governments to deliver

Perry McCarty focused on the problem of the world's groundwater resources and the accelerating risk of their contamination. We have to regard both pathogens and toxic chemicals. Prevention of contamination is always much cheaper and much more effective than remediation. Research must be complemented by communication and regulation.

Sven Erik Jörgensen emphasised the need for understanding and developing models for systems analysis, integrating water sanitation, water supply and wastewater treatment in a way that offers an optimum solution for ecological water management. Jörgensen's three concluding bullets were:

- Integration
- Consider the entire spectrum: cleaner technology, eco-technology and environmental technology
- Use models to find the best solutions

Tony Allan stated that the role of science is Prediction, Explanation and To influence society and the political economy. He defined three kinds of scientific knowing:

1. To predict: Modelling Sciences
2. To explain: Social & politics theory
3. To influence: Activist science

Allan regarded all three kinds of science as needed but strongly stressed the importance of the activist scientists which he called “the angels” – people that make a difference and produce real results. He also had found that Constructed knowledge

(ideas of society on say sustainability) always will overwhelm observed science.

Allan concluded by comparing politicians and scientists:

- Politicians were invented to deal with ambiguity which is always associated with uncertainty
- Modeling scientists deal with risk which can be captured with the numbers and the language of probability
- Politicians know what the game is about and accept the excitement of uncertainty
- Most scientists avoid the excitement of uncertainty.

## Ecosystem Services: An Economic Approach to Water Conservation

Convenor: Swiss Federal Office for the Environment (SFOEN)

Terrestrial ecosystems, such as soils, forests and wetlands, are essential to water management. Because of lack of valuation, ecosystems are degraded and their services lost, thus impacting heavily on water. Integrated Water Resources Management (IWRM) is not just about water but also much about land-use.

We need: an economic approach to the conservation of ecosystems and their services; to consider ecosystems as an economic part of the water infrastructure; and to recognise the need to invest in ecosystems.

Payments for ecosystem services (PES), a contractual transaction between a buyer and a seller for an ecosystem service or a land-use/management practice likely to serve that service should be considered as one of the tools to water management. Their application at basin level sets practical examples of partnerships for hydrosolidarity between upstream and downstream populations, between the public sector and private owners, between private companies and land owners.

Primarily PES is about natural resources management. Poverty reduction is a side-effect to PES. Nevertheless, the poor should not be worse off through PES, but in the contrary, at least a redistribution of means towards them. Major steps will be achieved if the ecosystem values are integrated into national development plans, into poverty reduction strategies as well as introducing them in the national budget. The ecosystems services and PES also need to be considered in the framework of major national policies such as IWRM Plans, National Forest Programmes, National Biodiversity Strategies, and other major documents.

PES is not a magic tool for water management but it creates a lot of opportunities to natural resources management as long the values of ecosystems are properly taken into account.

## Water Safety Plans: A Tool to Improve Health and Increase Prosperity

Convenors: International Water Association (IWA) and World Health Organization (WHO)

Drinking-water quality continues to be the cause of significant preventable disease in both developing and developed nations. Following, and in response to, the publication of the third edition of WHO's Guidelines for Drinking-Water Quality and the IWA Bonn Charter for Safe Drinking Water in 2004, Water Safety Plans were developed to help manage risks with a framework that encompasses all aspects of safety from catchment to consumer. WSPs have proven to allow multi-barrier approaches, enhance consumer confidence and enable improved stakeholder engagement.

The seminar was co-convened by WHO and IWA, and aimed to create a consensus among major donors, key government agencies, NGOs, and other stakeholders for a harmonised policy position on WSPs. Participants received the information necessary to enable a widespread scaling-up in the application of WSPs, and were shown a number of case studies that demonstrated their benefits, especially those that relate to health.

Guy Howard from the Department for International Development of the UK government (DfID) stated: "It's important to get all major players ... to develop more standardised approaches which are more cost-effective, consistent and coherent".

"Using a WSP approach helped us to measurably reduce nosocomial infection in our hospital", was one quote from Germany where a WSP has been implemented on a long-term basis.

All participants welcomed the offer to re-convene at the Stockholm Water Week in 2009 to demonstrate progress and share their experience in applying WSPs. They agreed to develop a policy document over the next 9 months which send a clear and consistent commitment to mainstreaming WSPs into national and international water & sanitation policies.



# Healthy Water Resources Planning: Recent Trends in Health Impact Assessment of Water Resources Development

Convenors: DBL – Centre for Health Research and Development, Faculty of Life Sciences, University of Copenhagen and World Health Organization (WHO)

WHO defines Health Impact Assessment as a combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.

It is a predictive development planning tool, aimed at reducing adverse health impacts and maximising health benefits. The rationale for investing in HIA includes economic (prevent transfer of hidden costs of development to the health sector), equity (focus on vulnerable groups), sustainability and good governance arguments.

Given the trends in water resources (contextual scarcity, changing rainfall patterns, increased production of wastewater) there is an increased need for HIA in water resources development. Awareness creation and capacity building among professionals from non-health sectors is essential – the recent IWA publication Health Impact Assessment for Sustainable Water Management (Fewtrell and Kay 2008) brings the subject to the attention of water resources professionals.

National governments and multi/bilateral donor agencies have their specific roles to play in ensuring effective and efficient HIAs of water resources development. Critically important is the establishment of a national HIA policy framework that defines decision-making criteria and procedures. Other capacity building efforts should focus on the essential HIA functions of the health sector, and the development of skills in intersectoral negotiation for professionals in all sectors. Recent WHO/DBL/InWEnt efforts in the Mekong countries illustrate the feasibility of delivering integrated HIA capacity building packages; the Nam Theun 2 dam case study from Lao illustrates the need for sound HIA.

The efforts by the International Finance Corporation (IFC, private sector arm of the World Bank group) were highlighted as an example of positive action. They include: expansion of “Guidance Notes” covering IFC Performance Standard #4 Community Health, development and expansion of environmental health areas methodology, development of “HIA Toolkit” and HIA training for Equator Principles financial institutions.

## Indicators for Action: Reporting on Water Management

Convenors: UN-Water, Stockholm International Water Institute (SIWI), Danish Hydrological Institute (DHI), UNEP-DHI Centre, Capacity Building for Integrated Water Resources Management (Cap-Net) and UNDP Water Governance Program

The seminar adds to the discussion started at the 2007 World Water Week in the session on IWRM monitoring and in 2006 on global monitoring. The main recommendations from 2007 focussed on the need to define indicators that help to show the impact of good water management implementing IWRM principles. This seminar demonstrated the progress made:

- A UN-Water task force on indicators-monitoring reporting was set to define a framework for the monitoring of the water sector globally and in particular selected relevant water indicators. It is coordinated by the WWAP. An initial set of key indicators has been prepared and a consultative process with key stakeholders has started.
- UN-Water carried out an IWRM survey with the UNEP-DHI that was presented at the CSD 16 session in May 2008.
- CAP-NET developed indicators for RBO and field testing is in progress

Notwithstanding this progress, a series of challenges related to IWRM monitoring were reported, such as:

- IWRM monitoring exercises still look too often at institutions instead of at functions in water management and their impacts on them.
- IWRM indicators are often just defined as indicators from different water sectors put together.

Conclusion: a constraining factor continues to be the lack of robust indicators and a framework for monitoring the progress and benefits of implementing the IWRM approach at various scales. There is a need to monitor the integration of the 3 Es in the way resources and uses are managed and developed.

The seminar embarked on a very successful approach using several round tables where participants could focus on one topic and discuss in small groups. The following concrete proposals for improved indicators were formulated:

- Performance against targets and progress made against objectives,
- Water management functions and policy objectives and not on institutions while monitoring IWRM.
- A possible entry: How water works for the economy, MDGs and poverty reduction without compromising ecological sustainability
- How disputes around water decrease.

The seminar closed with general statements on how to improve monitoring progress on water management, such as the need of capacity building for newly developed approaches and the need of further promoting the prioritisation of water in national government policies.

## Impending Disaster or Strategic Opportunity? Small Town Sanitation – It's a Big Issue...

**Convenors:** Building Partnerships for Development in Water and Sanitation (BPD), WaterAid and International Water Association (IWA)

With presentations from a range of different sector actors, this seminar explored current thinking on sanitation in the small town context and asked the question: is this an impending disaster and or a strategic opportunity for the sector? Speakers looked at what is already known and documented about small towns and sanitation and what is still unknown. Presentations were then made on current programmes of work delivering sanitation in small towns. These perspectives served as the basis for an interactive plenary discussion affording an opportunity for a broader set of views and experiences to be shared.

Key themes emerged during the session pointing to future areas of research. It was clear that there remains much that is unknown about small towns from the demographic trends to the current state of sanitation services. Although there is much experience out there, little has been documented and much of the literature that exists is dominated by water concerns rather than sanitation. Experience from different regions highlighted the importance of acknowledging the heterogeneity of small towns. What constitutes a 'small town' differed significantly from one region to another with significant differences across a series of variables from population size and density to institutional structures.

So, impending disaster or strategic opportunity? There was consensus that the demographic trends do suggest that sanitation in small towns is a looming concern but that this is, at the same time, a strategic opportunity for the sector. The main conclusion from the seminar is that there is a need for the development of a more comprehensive, detailed picture of what small towns look like now and what is currently happening in the sanitation sector to inform a strategic response to the challenge presented.

## Blue Revolution Initiative: Highlighting Worldwide Successes in Innovative Financing for Water and Sanitation

**Convenor:** United States Agency for International Development (USAID) and Advancing the Blue Revolution Initiative

Achieving the Millennium Development Goals by increasing access to safe water and basic sanitation services requires expanded local financial flows from both the public and private sectors. Under the aegis of the Blue Revolution Initiative, a flagship effort by the United States Agency for International Development (USAID), a panel of senior government officials and practitioners from Egypt, Kenya, the Philippines, India, Mexico and the United States presented a series of case studies outlining successful mobilisation of domestic financial resources for water and sanitation and engaged in a constructive dialogue with an informed and active audience. These diverse efforts shared a common approach in combining technical support with credit enhancements and private sector partnerships to mobilise domestic private sector financing for water and wastewater infrastructure. At the same time, each transaction dealt with its specific set of demands in mobilising domestic capital and building local support

The Honorable Jacqueline E. Schafer, USAID's Assistant Administrator for Economic Growth, Agriculture and Trade opened the seminar by saying that this programme will demonstrate that due to the macroeconomic reforms and decentralisation of power to local governments in many developing countries, there is substantial domestic private sector capital, often from pension funds and life insurance companies, willing to finance water projects at all levels, including the most local. Finding sustainable financing options for water and sanitation infrastructure is essential to improving access to water and sanitation services and thereby improving health, fostering economic growth and achieving the Millennium Development Goals. Brad Johnson provided the overall framework presentation for the seminar in which he noted that the largest public-private partnership in the world is the U.S. water system where 95% of all systems are publicly owned, but 95% of their investments are financed by the private sector. He noted that state water revolving funds are the key component of the system, and that this model has been successfully transferred to a number of developing countries. Assistant Minister El Alfy presented Egypt's programme to implement a new regulatory regime which would ensure that the state owned water and wastewater assets but then choose

the most efficient means to operate those assets. Undersecretary Paul from the Philippine's Ministry of Finance presented his country's far reaching reforms which are based on building strong public private partnerships for co-financing of water and wastewater programmes and even extend to securitising existing public sector water loans. Mexico's state Secretary of Finance, Fredy Marrufo, explained how Quintana Roo had established a Bond Bank which acts as a pooled financing vehicle with a sound irrevocable financial structure to assist the water and wastewater sector attract necessary capital. The Indian state of Karnataka has been a pioneer in setting up structures which have attracted private sector capital to finance pooled small town water and sewer projects. Mr. Chandramohan presented his agency's latest developments and financial innovations. Finally, Ms. Schafer introduced Mr. Kameel Virjee of the World Bank's Water and Sanitation Program, to present an example of how USAID and the Bank had collaborated to support a community water initiative in Kenya. Ms. Schafer noted that USAID is committed to improving water and sanitation services in Africa and has substantially increased its commitments in this area. The programme concluded with a final round of detailed questions and answers.

## The Himalayan Water Towers – Resources Under Threat?

**Convenors: International Centre for Integrated Mountain Development (ICIMOD) and World Agroforestry Centre, China (ICRAF-China)**

The effects of climate change on water resources may have adverse consequences on the livelihoods of more than 1.3 billion people. Furthermore, there is a knowledge gap in the scientific information that would be essential to develop measures for adaptation to climate change such as, the information on temperature and precipitation trends and on retreating glaciers and potential glacial lake outburst floods (GLOFs). To raise awareness of the climate and water scientists and the international community about it, ICIMOD organised the Thursday Afternoon Seminar during the World Water Week 2008 in Stockholm.

The seminar was addressed by distinguished scientists and policymakers from Bangladesh, Bhutan, China, India, Nepal and Pakistan, both as speakers presenting country perspectives and as panellists over lively discussions with distinguished personalities in the audience.

The seminar and panel discussions were chaired and moderated by the Director General, Andreas Schild, and co-chaired by the Senior Visiting Scientist (IWHM), Ramesh Vaidya, both of ICIMOD. An overview of the situation in the Himalayan Water Towers was presented by the Senior Water Specialist at ICIMOD, Mats Eriksson, following the welcome speeches by the heads of ICIMOD and ICRAF-China, Xu Jianchu. The overview presentation was based on the paper 'The Changing Himalayas' distributed at the seminar.

The central message of the seminar is that there is little data and information on climate, hydrology and meteorology for the Himalayan region and this has hindered proper planning and decision-making for adaptation to climate change. Given the global ecological significance of the region and the risk to the livelihoods of its people that number more than a billion, it is essential to further regional cooperation among the countries in the region for the exchange of data and knowledge to create regional databases. In this context, ICIMOD is well positioned to play a role in capacity building for water-related information and knowledge management in the region.

### **Photo Exhibition, 'Himalaya: Changing Landscapes'**

The International Centre for Integrated Mountain Development (ICIMOD) showcased a photo exhibition 'Himalaya: Changing Landscapes' at the Stockholm World Water Week, 17-23 August 2008, to raise awareness of the impact of global warming and climate change in the Himalayan region, and complementing the seminar 'Himalayan Water Towers: Resources Under Threat?' held on 21 August.

The exhibition displayed repeat panoramas of mountains, valleys, and glaciers in the Khumbu region of Nepal in the 1950s and in 2007; scientific teams conducting research in the 1950s; and portraits of mountain people. The photos provided a striking illustration of the impacts of climate change and glacial melting in the Himalayas over the last half century. A sound installation illustrated this symbolically: melting water from three tubes of ice caused a small hammer to hit Tibetan singing bowls every couple of minutes, which attracted much attention.

Visitors comments included 'dramatic', 'impressive', and 'spoke more than 100 pages in a book'. ICIMOD's publications were also appreciated, especially the Atlas of the Himalaya.

## Monitoring Drinking Water Supply and Sanitation: Moving Beyond 2015, Preparing the Next Generation of Indicators

Convenors: WHO/UNICEF Joint Monitoring Programme (JMP), United Nations Secretary General's Advisory Board on Water and Sanitation (UNSGAB), United Nations Human Settlements Programme (UN-HABITAT), Water and Sanitation Programme (WSP), UN-Water, Federal Ministry for Economic Cooperation and Development, Germany (BMZ), Department for International Development, United Kingdom (DFID), Swiss Agency for Development and Cooperation (SDC) and Stockholm International Water Institute (SIWI)

The seminar was built around a joint presentation from the co-convenors and presentations of country monitoring experiences. It gave an overview of global and national monitoring systems and identified priority actions to achieve more comprehensive sector monitoring.

Major challenges addressed in the seminar included: (i) MDG Target 7c indicators currently do not cover all key aspects of the target, (ii) reported coverage for the same country often differs according to sources and (iii) differences between urban and rural realities need to be addressed. It was recognised that progress in sector monitoring has been made since the 2007 Forum, especially at the global level. Opportunities for additional strengthening were identified, including the use of information technology, the complementary use of data from service providers and household surveys, exchanges between practical monitoring experiences and the preparation of support programmes (e.g. the Pan African Framework for Water Monitoring and Evaluation presented by the African Water Facility).

The co-convenors recommended priority actions: compare and align international and national processes (i) to harmonise national definitions and (ii) to maximise coherence between national and global monitoring; extend the disaggregation of data; learn from the differences between data sources; fine-tune household surveys; include water quality and disposal and treatment of wastewater in national monitoring; encourage citizen monitoring of services; promote regional monitoring of regional commitments; improve interagency dialogue, coordination and cooperation; and develop country monitoring capacity.

Experiences presented by Senegal and Madagascar showed practical examples of the importance of national data reconciliation to ensure better understanding and to develop harmonisation between different national agencies and coherence with global monitoring.

In terms of the next generation of national monitoring, participants prioritised the following actions: (i) establish one monitoring plan, led by Government, (ii) harmonise and refine definitions, categories and tools, led by National Statistics Bureau (or equivalent), (iii) ensure a process to analyse and explain differences in results between different data sources, and (iv) establish a multistakeholder, national monitoring platform with clear roles and responsibilities.

Conclusions/Recommendations: Compare and align monitoring systems to improve sector understanding. • Develop additional indicators to cover all aspects of safety and sustainability. • Broaden the scope of monitoring. • Prioritise support for capacity building for sector monitoring. • Continue collaboration towards a new generation of WSS monitoring.

## Integrated River Basin Management (IRBM) -Towards 5th World Water Forum

Convenors: United Nations Educational, Scientific and Cultural Organization (UNESCO) and Ministry of Land, Infrastructure, Transport and Tourism, Japan (MLIT)

A recent survey conducted by UN-Water on IWRM implementation revealed that the state of IWRM planning at the national level is steady but slower than expected. While efforts must be stepped up to meet the internationally agreed goal of IWRM planning, there is a real need for enhanced tools that translate IWRM concepts into stakeholder-driven actions.

With the support of the government of Japan, UNESCO intends to produce "IRBM Guidelines" to outline advantages and principles for managing river basins and to facilitate multilevel capacity building among decision-makers, policy-planners, practitioners, RBOs and NGOs. The IRBM approach addresses surface and groundwater resource issues in a holistic approach, integrating land use, water-related disaster management, environment conservation, socio-economics, culture, institution and livelihoods aspirations of basin communities at the river basin level – the basic hydrological unit that ties all these aspects together.

The launch of the IRBM Guidelines provided the opportunity to exchange views and discuss its perspective based on a series of concrete examples:

- Japan: exposed how a step-by-step approach reflecting the economic development and land use contexts was effective in achieving sustainable water resource management.
- Australia: having dedicated great efforts for urban and agricultural water resource development and management, this country's example highlighted the importance of stakeholders' participation.



- Bangladesh: highlighted the importance of integrating flood management measures into the IWRM plans, presenting evidence on how casualties caused by cyclones had been drastically reduced.
- La Plata River Basin: presented the importance of establishing coordination mechanisms among stakeholders in trans-boundary rivers.
- NARBO: highlighted the importance of knowledge and experience sharing among countries with close climate conditions, which can be created through a regional network.

The results of the discussion will be reflected in the “IRBM Guidelines,” to be presented at the 5th World Water Forum as a side publication of the 3rd Edition of the World Water Development Report.

# Side Events Thursday 21 August

## Developing Energy Efficiency Measures and Climate Change Adaptation Strategies for Water Utilities in Developing Countries and Towns

Convenor: UN-HABITAT and IWA

Action to help poor urban communities adapt and become more resilient to climate change must be initiated. At the same time the linked system of water and energy and its interactions is poorly understood and discussed. Disruptions in one part of the system can have unwanted consequences in another, with lost opportunities and increased risks. Therefore, the sector needs to adopt adaptation interventions to reduce these risks. At the same time, there is a need to reduce energy losses. Energy costs can represent up to 60-70% of the operating cost for utilities. Much of these come from inefficiencies, resulting in unnecessary emissions of CO<sub>2</sub> and poor quality of service. Water utilities need to work with their customers on understanding their water use and jointly seeking solutions to reduce water and energy. Practical tools exist to measure and reduce energy use through system optimisation or leakage reduction and will be disseminated through the IWA website.

## Water and Economic, Social and Cultural Rights – Discussing Nordic Approaches

Convenor: Swedish Water House Cluster Group on Water and Rights, Swedish University of Agricultural Sciences (SLU) and Church of Sweden

The event examined the role of human rights instruments in extending access to water and sanitation to the poorest. Government representatives from Sweden, Denmark and Finland shared the view that the right to safe drinking water is deduced from the Right to health and the Right to adequate living standard, but it has a moral rather than a legal value. Norway went further and stressed that access to safe drinking water entails a government obligation to fulfil it. Sweden sees development cooperation as the best way to implement the right, instead of judicial complaints mechanisms which risk overloading control systems. Denmark and Finland stated that their pro-poor focus is already strong and that a stronger formulation of the right would not change development policies significantly. The right to water does not imply free water for all, and all agreed on the need for constructive dialogue between legal experts and water experts to find innovative solutions to fulfilling the rights of those most in need.

## Realising the Potential: Sanitation Interventions as Preventive Health Actions

Convenor: WaterAid

Historically, sanitation stands as the single most effective public health intervention and yet it now ranks as one of the most neglected development sectors. New research was presented on the extent of the related disease burden in the developing world and the particular impact on child health. Given the profound impact of poor sanitation on public health, the issue of how sanitation can be better integrated into the planning and delivery of health strategies was explored. Examples of how sanitation can effectively be embedded within health programmes were related pointing to various entry points and incentives for both sectors. The plenary discussion concluded that the new evidence on the disease burden made sanitation an even more urgent health concern, requiring the attention of the health sector and senior policy-makers. To address this and achieve sustainable health outcomes will require greater coordination and dialogue with the health community.

## Delivering Big: Translating Knowledge into Action through Internet Technology

Convenors: Akvo, Netherlands Water Partnership (NWP) and Arghyam

On 21 August, Akvo, Arghyam and UN Habitat compared best practice in delivering change on a mass scale using internet technologies. Akvo founder Thomas Bjelkeman-Pettersson set out his team's vision for the water and sanitation sector to expand the funding of small projects in the manner that eBay has scaled up the concept of "bicycle for sale". Sunita Nadhamuni, CEO of Arghyam, described how her team had combined water experts and IT experts to create cutting edge multimedia courses. She also set out Arghyam's experience running the "Ask a Question" section of the India Water Portal, and how local language translation and issues can deliver a strong local flavour. Bert Diphooorn of UN Habitat outlined how MDG progress is being monitored in the Lake Victoria region of Africa, mapping local improvements in water and sanitation. Outputs are available at [www.akvo.org/blog](http://www.akvo.org/blog).

# Side Events Friday 22 August

## From Pilots to Policies: Working with Communities to Improve Urban Water and Sanitation

Convenors: International Institute for Environment and Development (IIED), Development Workshop Angola (DW), IIED-America Latina, Orangi Pilot Project Research and Training Institute (OPP-RTI), People's Dialogue Ghana (PDG) and Society for the Promotion of Area Resource Centres (SPARC)

The side event presented work being carried out by IIED and five of its partners in Angola, Argentina, Ghana, India and Pakistan. The project documents innovative & inspiring examples of locally driven water and sanitation initiatives in deprived urban areas. It provides a basis for better understanding of how to identify and build upon local initiatives that are likely to improve water and sanitation in low-income settlements. The presentation also showed how local organisations in those countries have managed to: scale up successful projects; work collaboratively; finance water and sanitation schemes; and use information systems such as mapping to drive local action and monitor improvements.